

FLIGHT

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Founder and Editor: STANLEY SPOONER

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

1924	
July 24—	
Aug. 10	Tour de France for Light 'Planes
Aug. 12	King's Cup Race
" 22	Entries Close at Ordinary Fees for Light 'Plane Competition at Lympne.
Sept. 5	Entries Close at Double Fees for Light 'Plane Competition at Lympne.
" 27-28	Eliminating Tests for Light 'Plane Competition at Lympne.
" 27—	
Oct. 8	Wireless Exhibition at Albert Hall, Kensington.
Sept. 29—	
Oct. 4	2-Seater Light 'Plane Competition at Lympne
Oct. 2	Aero Golfing Society. Autumn Meeting, at Moor Park Golf Club, for A.G.S. Challenge Cup presented by Cellon (Richmond) Ltd.
" 4	Grosvenor Challenge Cup Race at Lympne.
October	Schneider Cup Race, Baltimore
Dec. 5-21	Paris Aero Show.

EDITORIAL COMMENT.



Exit Britain

THE heading of this paragraph does not—at least is not meant to—refer to the Inter-Allied Conference now sitting in London, but to the enforced retirement from the struggle of Squadron-Leader MacLaren, Flying Officer Plenderleith, and Sergeant Andrews, following their latest crash among the Aleutian Islands. Theirs has been an unsuccessful, but none-the-less heroic fight with the elements and with bad luck, which has dogged them almost the whole way. It is scarcely an exaggeration to say that every mile of the way since the Vicker's "Vulture" left Calshot on March 25, persistent ill-luck has beset the would-be world-fliers. The difficulties started almost immediately, and it will be remembered that on reaching the French coast, after crossing the Channel, the three British fliers, in a fog, very nearly flew into the French cliffs, a crash being averted only by the skilful handling of the machine by Flying-Officer Plenderleith. The first really serious breakdown occurred at Corfu, when a long delay for a fresh engine became necessary. At last this was installed and the journey continued. There is no need here to labour the details concerning the number of difficulties that were subsequently encountered. Let it suffice to recall that some of these were of a climatic nature, while others were due to various mechanical breakdowns.

It is difficult to assign to any definite cause the reason for all these troubles, but without apportioning the "crime" to anyone in particular, it may be suggested that probably the root of the trouble lay in the overloading of machine and engine. It will be realised that the amount of gear that has to be carried on a journey such as that undertaken by the three gallant British aviators is very great, and although much of what it had been intended to carry was discarded before the start, what were deemed indispensable articles had to remain, with the result that the "flying weight" was probably

a good deal more than it ought to have been. By this we do not in any way intend to infer that the "Vulture" was overloaded in the sense that its airworthiness and general strength were impaired, but merely that, had the machine been less heavily loaded, it might have been possible to spare the engine more, with consequent gain in performance. As it was, it is to be feared that the tax on it was more than was prudent, and this fact must of necessity have contributed to the ultimate fate of the expedition. That it was by no means the sole cause will already have become evident to all who have followed from week to week the progress of the British fliers, and the way in which atrocious weather was met with on almost every stage of their journey. The two things combined seem to have conspired against success, and there were many who were of the opinion that when the first machine was wrecked at Akyab the attempt should have been abandoned.

For a time, it certainly looked as if this would have to be, but the very sporting and generous action of the American authorities in sending a spare machine from Japan to Akyab, on board an American naval vessel, enabled the British flight to be continued, and this action by our American friends must for ever remain one of the finest examples of true sporting spirit which the history of flying has to show. In a letter to *The Times* of August 5, Lieut.-Col. Broome pays a warm tribute to "our great-hearted fellow-aviators—not our rivals or opponents—but our very gallant friends," for this very practical expression of sympathy and help, and we, like Col. Broome, can but repeat and endorse MacLaren's message "Well done."

After getting their spare machine ready and leaving Akyab, the British world-fliers made excellent progress, and once more hopes began to be entertained that success might yet attend their efforts. After leaving Japan, however, the fates began to pile up odds against them, weather conditions became very unfavourable, illness among the crew caused delays, and finally this week came the announcement that the machine had been so badly damaged that the attempt would have to be abandoned.

In the meantime, it seems to be a case of "The King is dead, long live the King," for although the British fliers have now retired from the friendly contest, and two of the four American machines which originally left California are out of the running, others are taking up the task, and unless extreme ill luck is met by all, at least one attempt out of the many seems bound to succeed. The two remaining American machines are still waiting at Iceland for favourable conditions, and all will wish them well forward on the difficult and dangerous stages yet remaining. They are now flying, or about to fly over the districts where aircraft has not hitherto been used, and whether success or failure awaits their efforts, their experience cannot but be of very considerable value to aviation in general.

The Argentinian attempt, by Major Zanni, appears to have started extremely well, and since leaving Amsterdam a little over a week ago, Major Zanni has made excellent progress on his Napier-engined Fokker biplane. How he will fare when he enters the difficult zones in India and China yet remains to be seen, but the first stage promises well.

The Italian attempt, by Lieut. Locatelli on a Dornier "Waal" twin-engined flying-boat, with two Rolls-Royce "Eagle" engines, has barely more than

commenced, but so far progress has been good, the machine on its first "hop" having arrived at Hull, or rather at Brough, the Blackburn Aeroplane and Motor Co.'s seaplane base. This machine, incidentally, is one of the two which Amundson had intended to use on his Polar expedition, which was postponed owing, it is understood, to lack of funds. The flying boat is an all-metal one, and it will be interesting to see how it fares compared with the all-wood and composite constructions used by other world-fliers.

King's Cup Race

There is not a great deal to be said about, and almost nothing to be said for, this year's race for the Challenge Cup presented by His Majesty the King. Originally, it will be remembered, it had been hoped that the Air Council would be willing to let manufacturers who had suitable Service machines ready in time enter these in the King's Cup race. Doubtlessly individual constructors would have been willing to pay for the insurance of such machines, and in that case the worst that could have happened would have been a certain amount of delay in delivery to the Air Ministry. Knowing how long new types are left lying about after delivery without anything being done to or with them, we had hoped that the Air Ministry would have been glad to have agreed to some such arrangement. In that case the race which is to take place on Tuesday of next week could, and would, have been one of surpassing interest. New types would have been seen by thousands of taxpayers gathered on holiday bent at the various seaside towns, and general interest would have been aroused in a type of machine which seems likely to be of the very greatest importance to the future of the British Empire, *i.e.*, the seaplane or amphibian. The Air Council, however, could not see its way to giving permission for Service machines to be used, and the consequence has been that the whole nature of the race had to be altered.

It would be futile to pretend that under the circumstances the interest in the race has been retained. To begin with, the types entered are almost without exception several years old, and have been seen over and over again in various competitions. That, however, might not have been a very serious drawback, but the way in which this year the race for His Majesty's Cup has been arranged is hardly calculated to sustain interest and enable the lay man, or the expert, for the matter of that, to follow the race. The machines start at the same instant in the morning, some from Martlesham and others from Felixstowe, and proceed along any route they please around three turning points, finally to finish up at Lee-on-Solent. It will thus be impossible for anyone to know who is leading, and even at the finish the result will not be known until the handicap has been worked out. Thus the first man home will not necessarily be the winner; in fact, he will almost certainly not be. Under these circumstances it is unlikely that anyone will take keen interest in the race which should be one of the classic British events of the year. That as many machines have been entered as is the case is due solely to the sporting spirit of a few individual firms, and is certainly not prompted by any publicity which may accrue, which under the arrangements chosen will be almost negligible. As we suggested in our opening remarks, there is little enough to be said about the race, and nothing at all to be said for it as planned for Tuesday next.

≡ The King's Cup Race ≡

1924



Entries for the King's Cup Air Race, 12th August, 1924

Ident. Mark.	Entrant.	Pilot.	Aircraft.	Engine.
G-EBDO ..	Alan S. Butler ..	Alan S. Butler ..	D.H. 37 ..	275 h.p. Rolls-Royce "Falcon."
G-EBJQ ..	Sir Glynn Hamilton West ..	Flt.-Lt. H. W. G. Jones ..	Siddeley Siskin III ..	325 h.p. Siddeley "Jaguar."
G-EBJS ..	J. D. Siddeley ..	Frank Courtney ..	Siddeley Siskin III ..	325 h.p. Siddeley "Jaguar."
G-EBDK ..	G. Le Champion ..	J. King ..	Martinsyde F.6 ..	200 h.p. Wolseley "Viper."
G-EBFN ..	Sir Charles Wakefield, Bart. ..	Alan J. Cobham ..	D.H.50 ..	230 h.p. Siddeley "Puma."
G-EBIP ..	Douglas Vickers ..	H. J. Payn ..	Vickers "Vixen III" ..	450 h.p. Napier "Lion."
G-EBFP ..	Mrs. Theodore Instone ..	F. L. Barnard ..	D.H.50 ..	230 h.p. Siddeley "Puma."

Seaplanes

1 ..	Commander James Bird and Capt. H. C. Biard ..	Supermarine "Seagull" 450 h.p. Napier "Lion."
	H. T. Vane ..	Amphibian
2 ..	Godfrey L. Wood and Capt. Colonel the Master of Sempill ..	Supermarine "Seagull" 450 h.p. Napier "Lion."
	Leigh Mossley ..	Amphibian
3 ..	C. R. Fairey ..	Capt. H. Macmillan, M.C., 3-D Seaplane .. 450 h.p. Napier "Lion."
	A.F.C.	

Prizes.—1st Prize, The King's Cup and £100, presented by Samuel Samuel, Esq., M.P.
2nd Prize, £100, presented by Sir Charles Wakefield, Bart.

ON Tuesday, August 12, the Third King's Cup Race or "Circuit of Britain," will be flown for the magnificent cup so sportingly presented by H.M. the King. It is, we think, to be regretted that the number of entries, as may be seen from the above list, is not anything like so large as has been the case on the two previous occasions—23 in 1922 and 17 last year. However, in spite of this it is hoped that this year's race will provide additional interest in its new form, and so make up for the comparatively small number of competitors taking part.

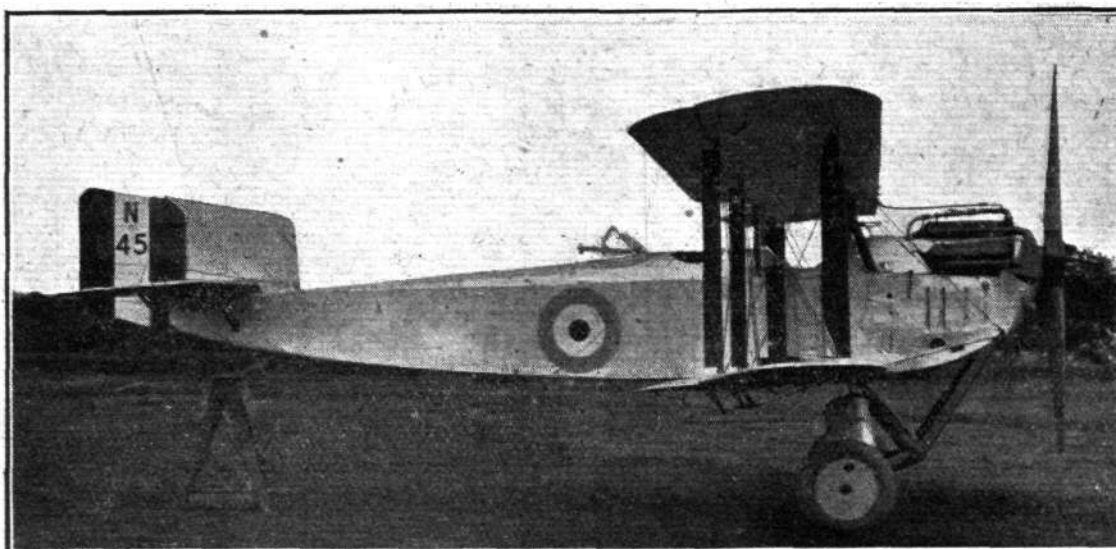
As indicated above, certain changes have been made in the character of this year's race, the most important of which is, perhaps, the inclusion of seaplanes. The course, also, has been changed, and this time, roughly speaking, encircles England and the southern portion of Scotland, measuring approximately 950 miles. There is, actually, no definite course to be followed as before, the aeroplanes starting from Martlesham Heath and the seaplanes from Felixstowe, near by, after which both types proceed to the following turning points: Leith (Harbour Pier), Dumbarton (the Castle), and Falmouth (Pendennis Castle). Competitors then finish at Lee-on-Solent, crossing the line (the Pier) in flight (in either direction) at a height of not more than 500 ft. Seaplanes alight on the water and proceed to the R.A.F. Slipway, while aeroplanes proceed to Gosport Aerodrome near by. A rough idea of this "course" may be obtained by referring to the small sketch-map shown above. It must be explained that it is a handicap race, on a time allowance basis for the whole course, and all competitors will be started at the same time—the handicap time allowance being deducted from the time taken to complete the course.

There are no controls, and competitors may alight when and where they like—either for rest or for refuelling—but

they must round each turning point (on his left) at a height of not more than 500 ft. so as to be easily identified. The turning points, it should be noted, have been so selected that both aeroplanes and seaplanes cover approximately the same distance. This arrangement will, no doubt, be quite interesting technically (as regards comparative performances), but it must be admitted that from the spectacular point of view—except, perhaps the start!—it may prove somewhat disappointing.

As regards the handicapping, competitors have to state the maximum capacity of all fuel tanks fitted in the machine, and the handicappers, assuming the tanks full, calculate the number of landings that would normally be required for refuelling, and allow time accordingly. The time allowances for each of the calculated refuellings will be as follows: Aeroplanes, 10 mins.; seaplanes, 20 mins.; amphibians (which are treated as aeroplanes), 10 mins.

Turning now to the entrants and pilots—we refer briefly to the machines on the following page—it will be noticed that several well-known and popular names appear in the accompanying list. Alan S. Butler is one of our few owner-pilots, and an enthusiastic supporter of the sporting side of aviation; incidentally, he is Chairman of the De Havilland Co. The Siddeley-Courtney combination—last year's successful competitors—will be without doubt hot favourites this year, and the presence of a rival with a similar machine will certainly add to the excitement. It is of interest to note that Mr. Champion is entering that excellent Martinsyde F.6 on which F. P. Raynham has flown so well—in spite of his proverbial bad luck—in past races. Sir Chas. Wakefield and Alan J. Cobham are two more popular figures in aviation—the latter winning third place and second place respectively in the 1922 and 1923 King's Cup Races. F. L. Barnard



The Third King's Cup Race, 1924 : The Fairey III. D Seaplane, 450 h.p. Napier "Lion" is similar to the land type shown here



THE THIRD KING'S CUP RACE, 1924 : The Martinsyde F.6, 200 h.p. Wolseley "Viper." This is F. P. Raynham's famous "Mustardsyde."



THE THIRD KING'S CUP RACE, 1924 : The two Siddeley "Siskin III," 325 h.p. Siddeley "Jaguar," entered for this year's race are similar to last year's winner, shown above, but are slightly larger. Photographs of this machine are not yet available, but these will be published in our report on the race itself.

was the popular winner of the first King's Cup. The "Seaplane" and "Amphibian" section, though small, is also of interest both as regards "men and machines." Capt. Biard gave us (temporarily) the Schneider Cup; Lieut.-Col. the

Master of Sempill—a keen aero enthusiast—makes his first appearance in air-racing; while Capt. Macmillan is famous for his magnificent effort at a round-the-world flight in 1922.

THE MACHINES IN THE 1924 KING'S CUP.

The D.H.37.—The D.H.37, which is entered and will be flown by Mr. Alan S. Butler, is by no means a newcomer in air racing, having taken part, not only in the two previous King's Cup races, but also in sundry Aerial Derbys, etc. It was designed and built in 1922 specially for Mr. A. S. Butler, who is Chairman of the De Havilland Company, for his personal use. While it was designed primarily as a touring machine, for enabling its owner to travel from place to place on business or pleasure, the racing side of its activities was

services, while Mr. Alan Cobham, who is flying one of the two "50's" entered for this year's race, has accomplished several noteworthy long-distance flights to and from the Continent on this type of machine. In the latest models the patent D.H. automatic variable camber gear is fitted, with the result that its already excellent performance has been improved.

The Fairey III.D Seaplane.—While but one single machine represents the true seaplane class in the King's Cup, this representation is well served in the Fairey III.D sea-

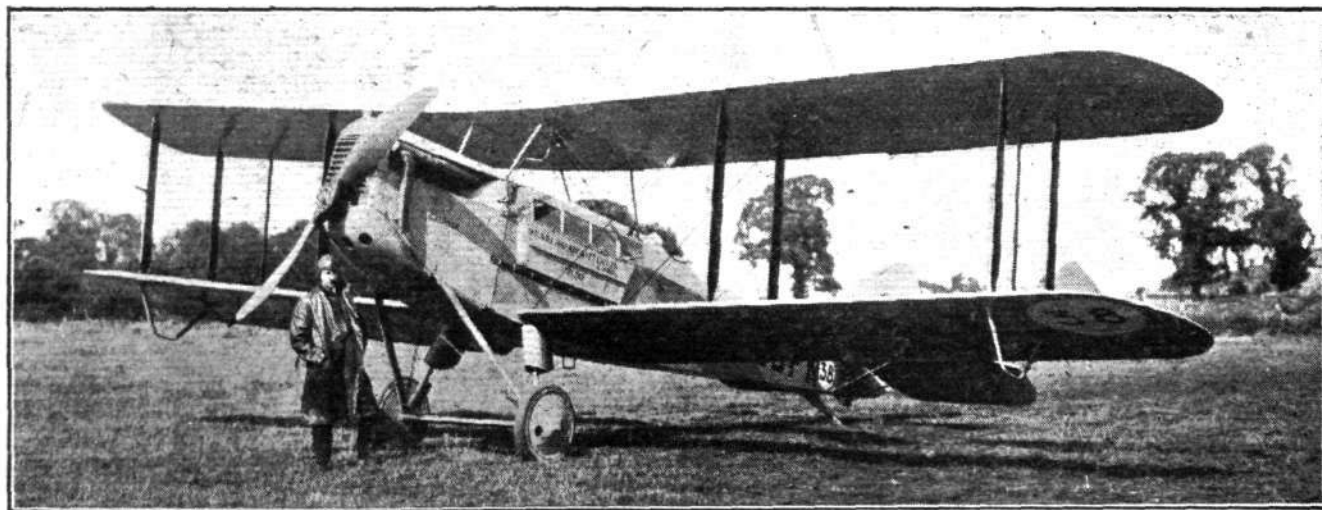


THE THIRD KING'S CUP RACE, 1924: The D.H. 37, 275 h.p. Rolls-Royce "Falcon," which will be flown by its owner, A. S. Butler.

not neglected. So far, to whichever use it has been put, it has shown itself to be an excellent machine in every respect. It has a fair turn of speed, a good range, will carry a real "useful" load, and is easy to handle. It is a biplane, of typical "D.H." appearance, fitted with a 275 h.p. Rolls-Royce "Falcon" engine. Of medium span (37 ft.), it has a single pair of interplane struts a side, and is exceptionally "clean" externally, i.e., free from projecting fittings, struts, etc.

The D.H.50.—The D.H.50—two of which are taking part

plane, fitted with a 450 h.p. Napier "Lion" engine, entered by Mr. C. R. Fairey. This particular machine is a recent version of a very famous and, comparatively speaking, old-established branch of the Fairey family. The III.D type made its first appearance some years ago, during which time it has given great satisfaction to both our own and foreign governments, and up to the present time it is still being extensively used in large numbers—it has, of course, received numerous modifications and improvements from time to time



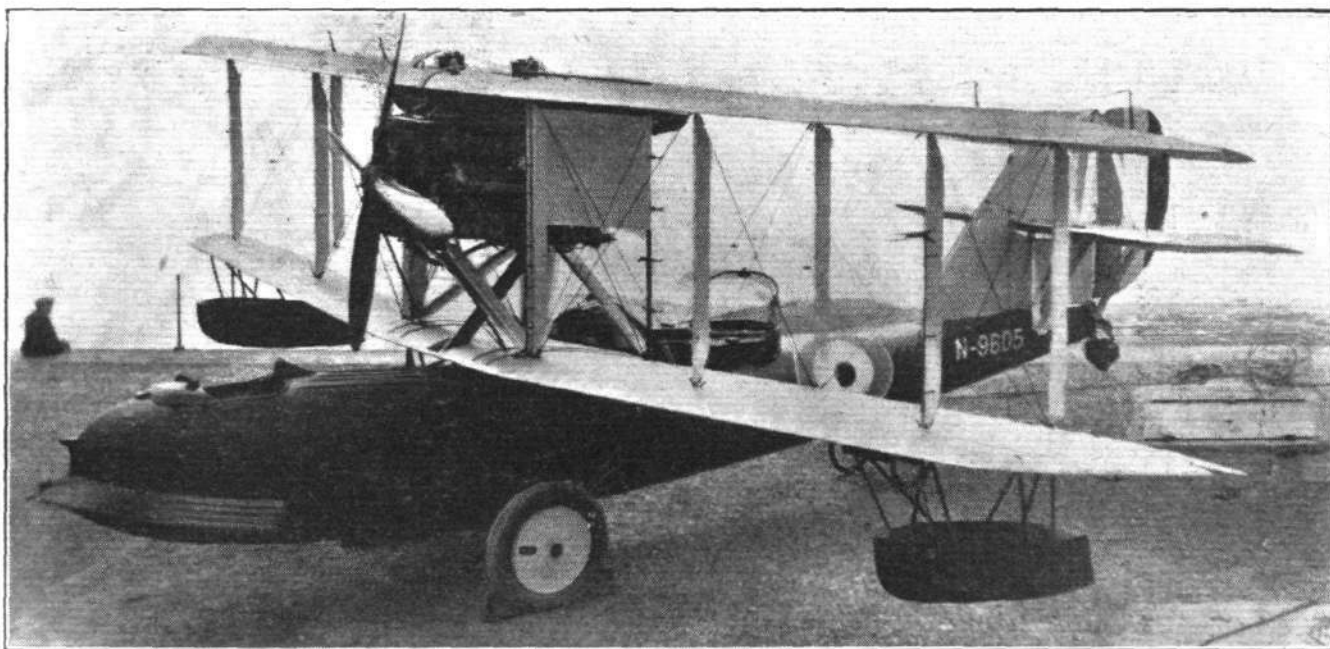
THE THIRD KING'S CUP RACE, 1924: The D.H. 50, 230 h.p. Siddeley "Puma." Two of these machines will take part in this year's race.

in this year's race—although making its first appearance in aerial racing, has already established a reputation, at home and abroad, for its remarkable efficiency. It is a biplane designed specially for commercial work, and is fitted with a 240 h.p. Siddeley "Puma" engine. Although thus moderately powered, and having a span of only 42 ft. 9 ins., the D.H.50 carries four passengers, in addition to the pilot, at a fairly high cruising speed. This type of machine has put up an exceptionally good performance on various commercial

since its first appearance. Incidentally, it may be mentioned that it was a III.D type of seaplane (with Rolls-Royce "Eagle") on which Wing-Commander Goble and Flying Officer MacIntyre flew round Australia just recently, whilst Capt. Cabral of the Portuguese Navy employed Fairey III.D type seaplanes in his flight across the Atlantic from Lisbon to Rio in 1922. The III.D is a comparatively large span tractor-biplane, fitted with twin floats. It is also fitted with the well-known Fairey patent variable camber wings.

The Martinsyde F.6.—This "classic" machine hardly needs any introduction here; firstly, owing to the fact that it is of a type that won fame as far back as the Great War, when it played a by no means unimportant part in maintaining our supremacy in the air. Secondly, the machine taking part in this year's race is the identical 'bus owned and flown by its former owner, F. P. Raynham, who has flown it in many of our aerial competitions and has on more than one occasion all but won the race. The Martinsyde

the "Siskin II" which won last year's race (and which is illustrated herewith), but are otherwise very much the same in general appearance. The "Siskin III" is a tractor biplane, largely constructed of metal, the top plane of which is very much larger than the lower one. An outstanding feature consists of the unusual type of oleo-pneumatic undercarriage. Both machines are fitted with standard Siddeley "Jaguar" engines. Owing to the extra amount of fuel to be carried and the fact that the Siskin "III" is



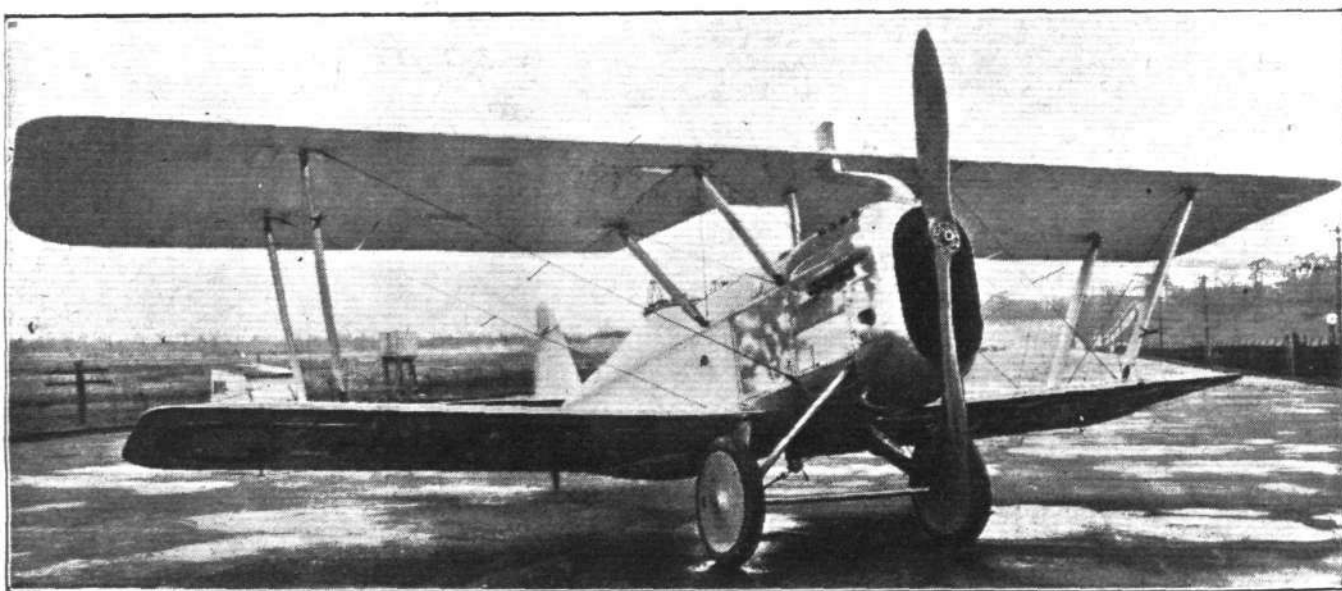
THE THIRD KING'S CUP RACE, 1924 : The Supermarine "Seagull" Amphibian flying boat, 450 h.p. Napier "Lion," two of which are entered in this year's race.

F.6, which is fitted with a 200 h.p. Wolseley "Viper" engine, is a single-seater tractor biplane of exceedingly graceful appearance. Incidentally, it may be added that Raynham tuned and adjusted this particular machine with excellent results, obtaining some considerable improvement in its performance.

The Siddeley "Siskin III."—The two Siddeley "Siskin III" machines entered are new and improved versions of the famous "Siskin," single-seater fighter which has been

larger than "Siskin II," it is not expected that this year's machines will make as good a time over the course as that put up by Courtney last year. It is hoped to complete the course with only one stop for fuel.

The Supermarine "Seagull."—The two Supermarine "Seagulls" are amphibian flying-boats, and it is uncertain, therefore, if these should be classed as sea or land 'planes. In all probability they will start from Martlesham. The "Seagull" is fitted with a 420 h.p. Napier "Lion" engine,



THE THIRD KING'S CUP RACE, 1924 : The Vickers "Vixen III," 450 h.p. Napier "Lion," entered for this year's race differs from the machine shown above, which is a Service type, only in minor details.

supplied to the British Air Ministry—in various stages of modification and improvement—during the last two or three years by Sir W. G. Armstrong Whitworth Aircraft, Ltd. They are identical, and are standard models except that the military equipment is not fitted and two 55-gallon fuel tanks are mounted under the top plane, in addition to a 20-gallon tank in the body. They are slightly larger than

and is a three-seater fleet-spotting, deck-landing biplane type. Its principal feature—and a somewhat unusual one for machines of the flying-boat type—is that a tractor airscrew is employed instead of a pusher. The pilot is located in the extreme nose of the hull, where he obtains an unrestricted view. As is usual with ship's planes, the wings are made to fold. The wheel landing gear consists of a wheel

mounted on each side of the hull, so hinged that each wheel may be drawn up flush with the underside of the lower plane, where it is out of the way when the machine is on the water. When down, the wheels keep the hull well clear of the ground, whilst the keel of the hull, at the rear, is made sufficiently strong to withstand any abrupt contact with the ground when taxiing, etc.

The Vickers "Vixen III."—This machine is a new and improved version of the experimental "Vixen" produced by Vickers, Ltd., last year. Owing to Air Ministry restric-

tions, very few particulars of the construction, etc., of this machine are available at the moment. However, it has been designed as a two-seater reconnaissance fighter, and the accompanying illustration of the Service type will serve to give an idea of the general appearance of the machine entered for this year's King's Cup, which differs only in minor details. It is a tractor biplane, fitted with a 450 h.p. Napier "Lion" engine, and the top plane is slightly larger than the lower one; it has one pair of interplane struts each side of the fuselage, which is of clean design, well streamlined.

THE PREVIOUS KING'S CUP RACES

It was two years ago that His Majesty the King presented a cup for a big air race round Britain, and by this gracious act British Aviation undoubtedly benefited to some considerable extent—such welcome encouragement coming as it did at a time when the prospects of British Aviation generally were none too bright. This first King's Cup race, at all events, received very hearty support, with the result that it proved to be one of the biggest air races ever held in this country, both as regards the number of machines taking part, and the time and distance involved. It was in progress for two days, starting on September 8, 1922, and finishing the following day. The total distance over the whole course was

of the most interesting air races we had ever seen, as may be gathered from the following list of the different machines which took part. The 21 machines which actually flew in the race comprised: Avro "Baby" (35 h.p. Green), Sopwith "Gnu" (110 h.p. Le Rhone), Avro "Lucifer" (100 h.p. Bristol "Lucifer"), two Blackburn "Kangaroo" (2-275 h.p. Rolls-Royce "Falcon"), two Boulton and Paul P.9 (90 h.p. R.A.F.), Vickers "Vulcan" (350 h.p. Rolls-Royce "Eagle VIII"), Avro "Viper" (200 h.p. Wolseley "Viper"), Bristol monoplane (100 h.p. Bristol "Lucifer"), Martinsyde F.6 (200 h.p. Wolseley "Viper"), Bristol 10-seater biplane (400 h.p. Bristol "Jupiter"), D.H. 9c (230 h.p. Siddeley



THE FIRST KING'S CUP RACE, 1922: A close finish between first and second competitors. (1) F. L. Barnard, on the D.H.4a., crossing the finishing line, followed two minutes later by (2) F. P. Raynham on his Martinsyde. (3) Chairing the winner whilst, on the right, Raynham—second, but smiling, looks on.

approximately 850 miles, and this was divided into sections, as follows: Croydon (start)—Birmingham, Castle Bromwich, 106 miles; Birmingham—Newcastle, Town Moor, 168 miles; Newcastle—Glasgow, Renfrew, 120 miles; Glasgow—Manchester, Alexandra Park, 183 miles; Manchester—Bristol, Filton—Croydon (finish), 108 miles. Competitors proceeded as far as Glasgow on the first day, and continued on the second portion of the course the next day.

A compulsory stop of 1½ hours was made at each of the intermediate controls. No fewer than 23 machines were entered, out of which number only two failed to put in an appearance—one, an Avro "Baby," which was to have been flown by Bert Hinkler, being damaged the day before the race, and the other, a Supermarine amphibian flying boat (the only machine of this type in the race), being withdrawn some days before. It was a handicap race, open to all types of aeroplanes, with the result that an exceedingly representative selection of machines, ranging from the small 35 h.p. Avro "Baby"—Green to the large twin-engined Blackburn "Kangaroo," took part. In fact, as far as variety in types of machines was concerned, the First King's Cup race was one

"Puma"), D.H. 9b (230 h.p. Siddeley "Puma"), two D.H.9 (230 h.p. Siddeley "Puma"), D.H. 37 (275 h.p. Rolls-Royce "Falcon"), D.H. 9a (350 h.p. Rolls-Royce "Eagle VIII"), D.H. 4a (350 h.p. Rolls-Royce "Eagle VIII"), S.E. 5a (200 h.p. Wolseley "Viper"), and Siddeley "Siskin" (325 h.p. Siddeley "Jaguar"). It will be noticed that De Havilland machines are well represented—one-third of the total number of machines being of this make.

Inasmuch as competitors were started from Croydon according to their handicap time allowances—the Avro "Baby," as "limit man," being started first, and the Siddeley "Siskin," at "scratch," being the last to go—the progress of the race could be followed with a certain amount of interest, whilst at the finish, when just half the number of starters completed the course, the machines came home fairly close together. To be exact, they all arrived home within the space of two hours.

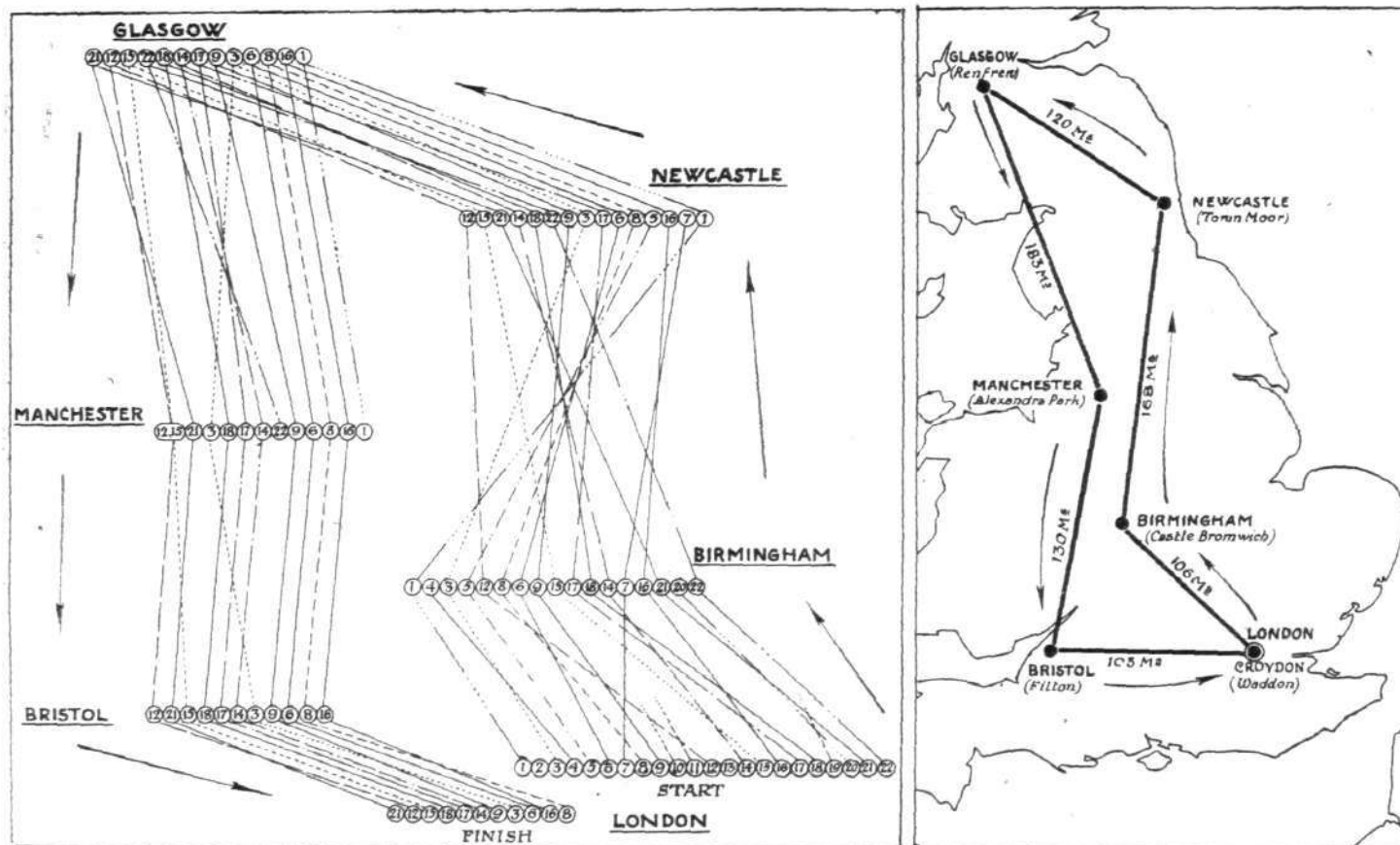
We do not propose to go over the race again in detail, but by means of the accompanying diagram the reader can, if he wish, follow the progress made by each of the competitors throughout the race. We will, however, just outline the



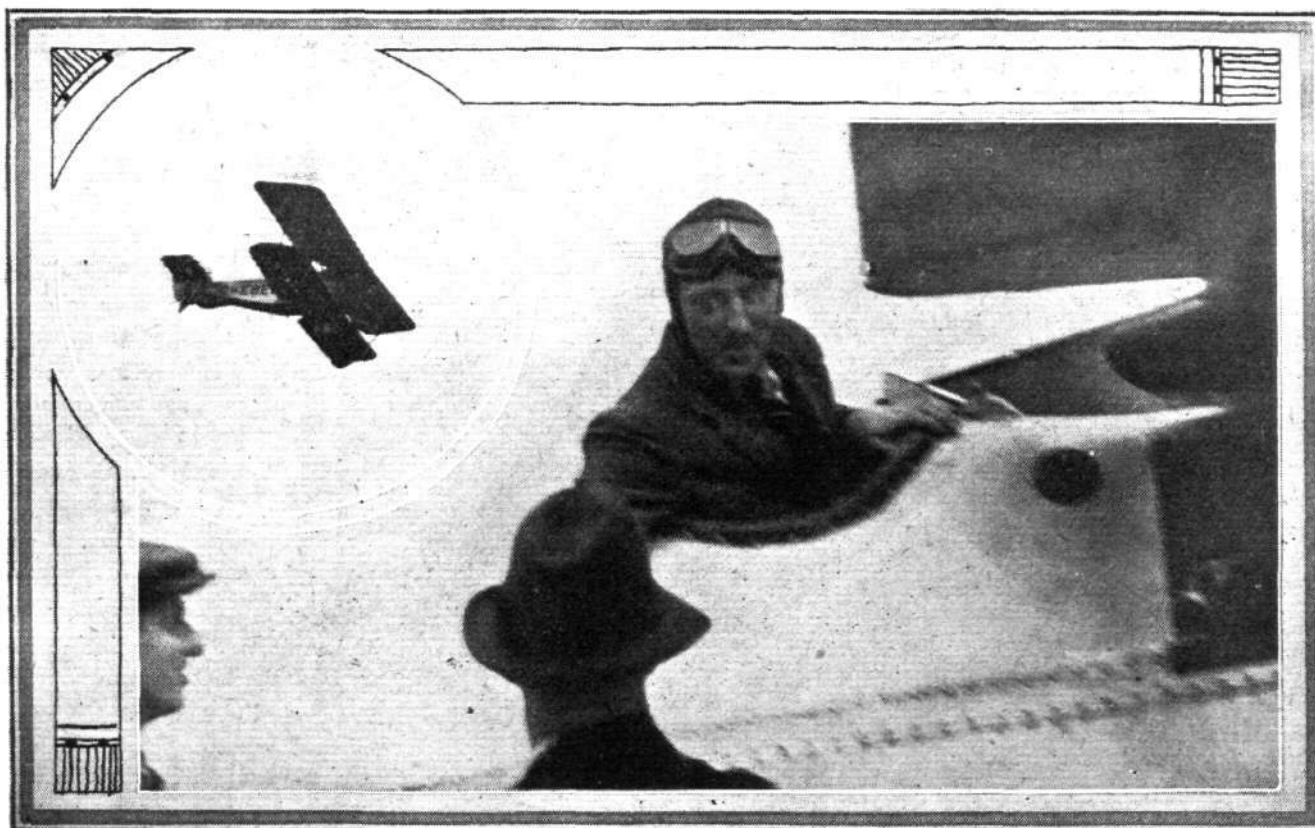
The First King's Cup Race, 1922 : F. L. Barnard, the winner, receives three cheers after the presentation of the King's Cup by Lieut.-Col. Moore-Brabazon. Sir Samuel Instone, entrant of the winning machine, is standing just behind the cup.

salient features and incidents of the race during the two days of its progress. First and foremost, very large crowds of people assembled to witness the race, not only at Croydon for the start and finish, but each of the various controls and also at different places along the route.

As previously stated, 11 out of the 22 machines entered (21 actually started) got home safely. Out of the 21 starters three failed to reach the first control, Birmingham, owing to minor troubles. Courtney made the best speed over this section, making 127.2 m.p.h., Barnard's speed being 120



THE FIRST KING'S CUP RACE, 1922 : The progress of the race shown graphically. On the right is a sketch-map of the course, on the left the progress made by each competitor. The figures, read from left to right, indicate the order in which competitors arrived at the controls. The competitors were:—(1) H. J. Payne (Avro Baby), (2) B. Hinkler (Avro Baby), (3) W. H. Longton (Sopwith Gnu), (4) R. Carr (Avro-Lucifer), (5) Spenser Grey (Blackburn Kangaroo), (6) C. T. Holmes (Boulton and Paul P. 9), (7) R. Kenworthy (Blackburn Kangaroo), (8) J. E. Tennant (Boulton and Paul P. 9), (9) S. Cockerell (Vickers Vulcan), (10) F. C. Broome (Avro Viper), (11) R. de H. Haig (Bristol Mono.), (12) F. P. Raynham (Martinsyde F6), (13) C. F. Uwins (Bristol 10-seater), (14) L. Hamilton (D.H.9c), (15) A. J. Cobham (D.H. 9b), (16) A. F. Muir (D.H. 9), (17) A. S. Butler (D.H. 37), (18) M. M. Piercey (D.H. 9), (19) H. H. Perry (D. H. 9a), (20) C. Turner (S.E. 5a), (21) F. L. Barnard (D. H. 4a), (22) F. T. Courtney (Siddley Siskin).



THE SECOND KING'S CUP RACE, 1923 : F. C. Courtney seated in the Siddeley "Siskin" (Siddeley "Jaguar") after the winning of the King's Cup Race. Inset, the "Siskin" crossing the line.

m.p.h. All got safely away from Birmingham, on the way to Newcastle two more dropped out, leaving 15 arrivals at the second control, and of these several also encountered minor troubles *en route*, and had to land at sundry places. On the last stage for that day, from Newcastle to Glasgow, two more competitors retired, while this section provided some excitement owing to the fact that the leading machines kept very close together, producing some close "finishes" at Glasgow.

There were thus 13 starters from Glasgow the following morning, the competitors being started off according to their handicap times, plus or minus the time gained or lost on their handicap for the first leg. All thirteen arrived at Manchester, Raynham and Cobham putting up an exciting fight to

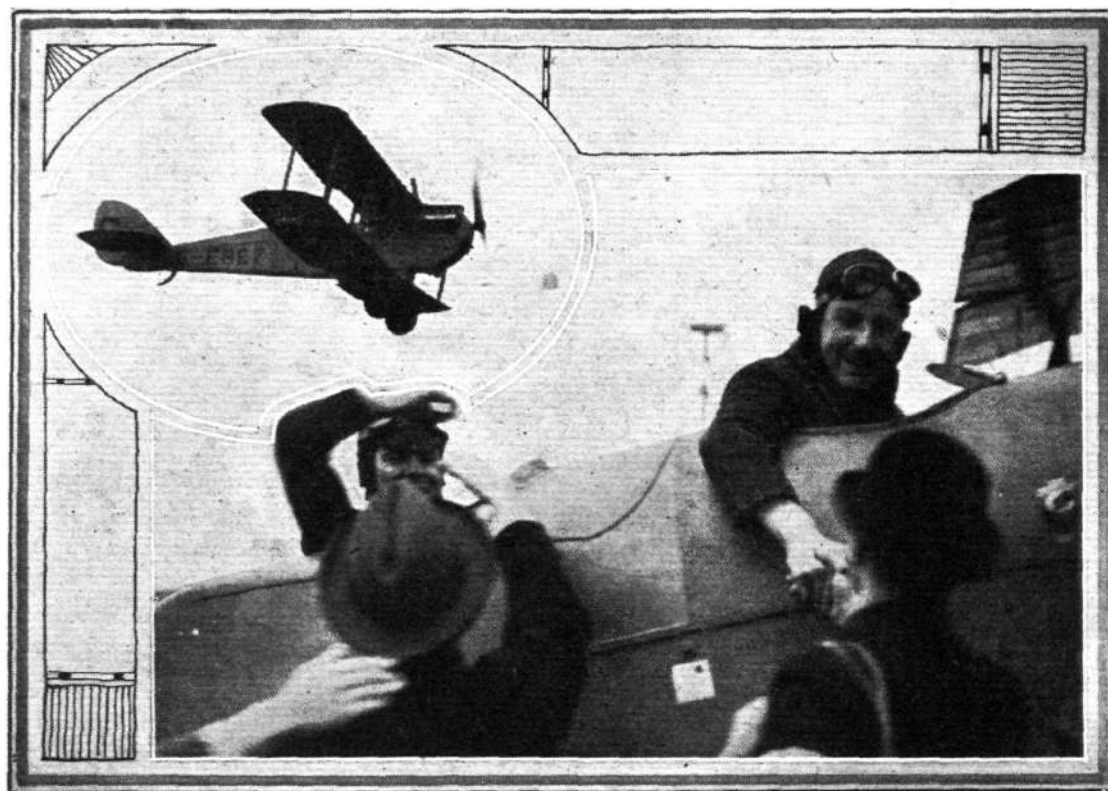
be first in. At this stage Payne, who had put up an extremely plucky fight all through on the Avro Baby, had to retire owing to magneto trouble, while Courtney, who had so far made very good progress, also had to retire owing to a breakage in his machine.

Eleven now remained, and all arrived at Bristol, Raynham and Barnard now fighting hard for first place. On the final stage to Croydon Barnard obtained the lead and crossed the line first, some two minutes ahead of Raynham. Barnard's time for the whole course was 6 hrs. 32 mins. 50 secs., and Raynham's 7 hrs. 43 mins. 43 secs. Cobham was third with 7 hrs. 29 mins. 47 secs. So ended the First King's Cup Race.

The second King's Cup Race was flown on July 13 and 14, 1923, and the general scheme of things was very much the



The Second King's Cup Race, 1923 : The Duke of Sutherland presenting the King's Cup to Mr. J. D. Siddeley, entrant of the winning machine. On the left and extreme right respectively, Mr. and Mrs. F. T. Courtney.



The Second King's Cup Race, 1923: Alan J. Cobham and his passenger who secured second place and, inset, his D.H.9 (Napier "Lion") crossing the line.

same as that obtaining in the previous year's race. The course was practically the same, except that the start and finish took place at Hendon aerodrome instead of Croydon. This change made the total mileage over the whole course about 794 miles. Not quite so many entries were received for this second race, the total number being 17, included in which were several of the previous year's favourites, such as Frank Courtney, A. J. Cobham, F. L. Barnard, F. P. Raynham, Bert Hinkler, etc. Sir Samuel Instone once again entered his previous year's successful combination—Barnard on the D.H.4A, while Mr. J. D. Siddeley similarly re-entered Courtney on the "Siskin." Two other interesting and popular entrants were members of the "Profession"—Mr. George Robey, who entered Alan Cobham on a D.H.9, and Harry Tate, who entered a D.H.9c piloted by Capt. Broad.

As regards the machines, with the exception of two, they were all "old" types. The two new machines comprised a Gloucestershire "Grebe" (325 h.p. Siddeley "Jaguar" engine) and a Supermarine "Sea Eagle" amphibian flying boat (360 h.p. Rolls-Royce "Eagle IX" engine). This latter machine, perhaps, created the greatest interest of all, as an amphibian had seldom been seen in a race, and also it was one of the then latest types of commercial craft. The following is a list of the 17 machines with their pilots, given in the order of starting:—Sopwith "Gnu" (110 Le Rhone), Flight-Lieut. W. H. Longton; Boulton and Paul P.9 (90

R.A.F.), Sqdn.-Ldr. F. L. Robinson; Supermarine "Sea Eagle" (360 Rolls-Royce "Eagle IX"), Capt. H. C. Biard; Avro-Viper (200 Wolseley "Viper"), B. Hinkler; Martinsyde F.6 (200 Wolseley "Viper"), F. P. Raynham; D.H.9c (230 Siddeley "Puma"), Capt. C. D. Barnard; D.H.9c ("Puma"), Capt. H. S. Broad; D.H.34 (450 Napier "Lion"), G. Powell; D.H.9 ("Puma"), A. F. Muir; Vickers "Vulcan," (450 Napier "Lion"), Capt. S. Cockerell; D.H.9A (350 Rolls-Royce "Eagle VIII"), Capt. R. H. Stocken; D.H.37 (275 Rolls-Royce "Falcon"), Maj. H. Hemming; D.H.4A, (350 Rolls-Royce "Eagle VIII"), F. L. Barnard; D.H.9A (450 Napier "Lion"), H. H. Perry; D.H.9 (450 Napier "Lion"), A. J. Cobham; Siddeley "Siskin" (325 "Jaguar"), F. T. Courtney; Gloucestershire "Grebe" (325 "Jaguar"), L. L. Carter.

Out of the 17 entrants 14 machines started; of the three non-starters one was disqualified, one was put out of action the day before, and the other could not be spared from the commercial service to which it belonged. Seven of the 14 starters completed the full course. Comparatively few people turned up at Hendon to see the start, while at the various controls the crowds, in comparison with the previous year's, were also small. All got to Birmingham without incident, except that the Vickers "Vulcan" stripped some of its wing fabric and had to retire. On the Birmingham-Newcastle section Raynham broke a bracing wire and also had to retire, near Leeds. The remainder arrived safely



THE SECOND KING'S CUP RACE, 1923: Three interesting machines in the race. From left to right, A. S. Butler's D.H. 37 (Rolls-Royce "Falcon 3") and F. P. Raynham's "Martinsyde F.6 (Wolseley "Viper")—both owned and frequently flown by these two enthusiasts—and the Vickers "Vulcan" Commercial 'plane (Napier "Lion")

at Newcastle. Here Biard burst a tyre, and, having discarded his spare wheel at Birmingham, continued on the rims!

The remaining 11 machines arrived at Glasgow within the space of half an hour, Courtney leading and Carter close behind. Biard managed to make a safe landing with the tyreless "Sea Eagle," but slightly damaged the wheels, and as he replaced these with wheels obtained from "outside" he was officially placed out of the race.

Nine officially started from Glasgow the next morning—Stocken having retired and Biard, although he started,

being disqualified. All arrived fairly close together at Manchester. Carter broke a landing wire, which put him out of the race, while C. D. Barnard failed to cross the line correctly and was disqualified. Thus only seven machines left for Bristol, where they arrived with Courtney and Broad "neck and neck." All seven started on the final stage to Hendon, and all arrived safely. Courtney was first, having completed the full course in 5 hrs. 25 mins. 27 secs. (150 m.p.h.). Second place was obtained by Cobham (George Robey's "jockey"), whose time was 5 hrs. 36 mins. 25 secs., while the Tate-Broad combination obtained third place.

PROGRESS IN THE BIG FLIGHTS

Round-the-World Flights

SINCE our last report on the World-Flights matters have been going none too well for both British and American expeditions, misfortune having once again overtaken them. In the first place, it looks as if the British attempt by Squad.-Ldr. MacLaren will have to be abandoned, for his second Vickers "Vulture" has been crashed beyond repair—fortunately without injury to himself or crew. The American team, when they talked, on their arrival in this country, of having negotiated the worst part of their section when they crossed the Pacific, did not do full justice to our own weather conditions. These caused some delay in their leaving the British Isles, and when they did, only one managed to penetrate the prevailing fog and reach Iceland, while one, Lieut. Wade, was forced to descend and crashed his machine in so doing.

After his arrival at Petropavlovsk very little news was received from Squad.-Ldr. MacLaren, except that he was weatherbound, as reported last week. At first it was reported that he was missing again, and then came an announcement that he had met with an accident, as a result of which it seemed unlikely that he would be able to continue the flight. At the time of writing no details of this mishap are available, but it appears that they resumed their journey, from Petropavlovsk for Attu, probably on Sunday last, but, owing to thick fog, they were forced to descend in heavy seas near Nikolski, Komandorski Islands. In doing so, the machine was seriously damaged. Fortunately no one was hurt, and the s.s. *Thiepval* was able to rescue them and salve the engine and hull of the machine. As the latter is beyond repair and no spares are available, there seems to be little hope of the flight being continued. Squad.-Ldr. MacLaren, accompanied by Flying Officer Plenderleith and Serg. Andrews, left Calshot on the Vickers "Vulture" on March 25 last, and on reaching Petropavlovsk on July 24 they had completed 12,305 miles, a little over half the total distance round the world.

As we briefly announced last week, the three American world-flyers, Lieuts. Smith, Nelson and Wade, resumed their flight from Brough, Hull, on July 30. Having previously made trial flights on the Humber, the three Douglas world-cruisers made a start for the final leg of the world-flight at about 10 a.m. As had happened on previous occasions, Lieut. Smith's machine had great difficulty in rising, and the others were circling well up overhead before their leader finally got off the water. However, all three machines eventually made off towards Kirkwall, in the Orkneys, following the coast line. During the latter part of the

journey they encountered fog, and after a flight of 5 hrs. 40 mins. they arrived safely at Kirkwall. Fresh fuel was immediately taken in preparatory to an early start next morning. The British clerk of the weather said otherwise, however, and it was not until August 2 that they were able to make a start for the 800-mile oversea trip to Iceland. The sea at Scapa Flow was glass-calm when they made a start at 8.40 a.m., but once again Lieut. Smith's machine refused to rise. His companions, therefore, descended and made another start, Lieut. Smith following in the roughened waters caused by their machines, and thus succeeded in getting off. They soon encountered thick fog and lost sight of one another. Lieuts. Smith and Wade returned to Kirkwall, but Lieut. Nelson continued on his way. About 300 miles from Iceland he sighted the U.S. destroyer *Billingsley*, and learning that his companions—whom he thought were ahead—had not passed, he decided to push on. Shortly after the weather cleared, and Hornafjord was reached at 4 p.m.

Lieuts. Smith and Wade made a second attempt next day, the former arriving at Hornafjord after flying through fog and rain squalls, but Lieut. Wade, just before reaching Faroe Islands, had engine trouble, and in landing damaged his machine. Lieuts. Wade and Ogden tried hard to effect repairs, and drifted about on a rough sea for four hours before being rescued by a British trawler. The machine was taken in tow by the *Billingsley* to the U.S. cruiser *Richmond*, which endeavoured to hoist the machine on board. Unfortunately the hoisting gear broke, causing greater damage still, and further efforts to salve the machine failing it had to be sunk by gunfire. The two airmen are naturally very disappointed at being thus put out of the world-flight after having got so far. Smith and Nelson arrived at Reykjavik on August 5.

Maj. Zanni, of the Argentine Air Service, who, with his mechanic, Beltrame, is making a round-the-world dash on a Fokker C.IV (Napier "Lion"), has made very good progress since he left Amsterdam on July 26. From Rome he arrived at Constantinople on July 30, continuing after an hour's stop to Aleppo. On July 31 he reached Baghdad, and then flew on to Basra. The next day he got as far as Bundar Abbas, and on August 2 he got as far as Karachi. He reached Naserabad on August 5.

Sig. Locatelli, the Italian aviator who is attempting a flight across the Atlantic on a Dornier "Waal" mono seaplane, arrived at Brough, Hull, from Rotterdam on August 4.

ROYAL AERONAUTICAL SOCIETY

OFFICIAL NOTICES

THE Council of the Royal Aeronautical Society announce the following programme of lectures for the Session 1924-1925 so far as at present arranged. Further lectures to complete the programme will be announced later. Advance copies of all lectures may be obtained from the Secretary, 7, Albemarle Street, W.1., price 6d. each or 5s. for the series.



1924

- Oct. 2. Lieut.-Col. H. T. Tizard, A.F.C., F.R.Ae.S. (of the Department of Scientific and Industrial Research), Chairman: Inaugural Lecture.
- Oct. 16. Dr. A. Rohrbach (of the Rohrbach Metall-Flugzeugbau Co.): "Large All-Metal Seaplanes."
- Oct. 30. Major J. S. Buchanan, A.F.R.Ae.S. (of the Technical Department, Air Ministry): "The R.Ae.C. Light Aeroplane Competitions."
- Nov. 13. Professor L. Birstow, C.B.E., F.R.S., F.R.Ae.S. (Zaharoff Professor of Aeronautics, University of London): "Skin Friction."

- Nov. 27. Dr. G. C. Simpson, C.B.E., F.R.S. (Director, Meteorological Office): "Thunderstorms."
- Dec. 4. Colonel F. Searle, C.B.E., D.S.O. (Managing Director, Imperial Airways, Ltd.): "The Maintenance of Commercial Aircraft."
- Dec. 18. Mr. A. R. Watson Watt (Superintendent, Radio Research Board Station): "Recent Studies on Radiotelegraphic Atmospheric."
- 1925
- Feb. 5. Air Commodore C. R. Samson, C.M.G., D.S.O., A.F.C., A.F.R.Ae.S.: "The Operation of Flying Boats in the Mediterranean."
- Feb. 19. Major R. V. Southwell, A.F.R.Ae.S. (Superintendent, Aerodynamics Department, National Physical Laboratory): (Title to be announced later).
- Mar. 5. Lieut.-Col. C. B. Heald, C.B.E. (Medical Adviser to the Director of Civil Aviation, Air Ministry): "Some Medical Aspects of Air Transport."
- Mar. 26. Dr. Eckener (Managing Director, Zeppelin Airship Co.): "Modern Zeppelin Airships."

W. LOCKWOOD MARSH, Secretary.

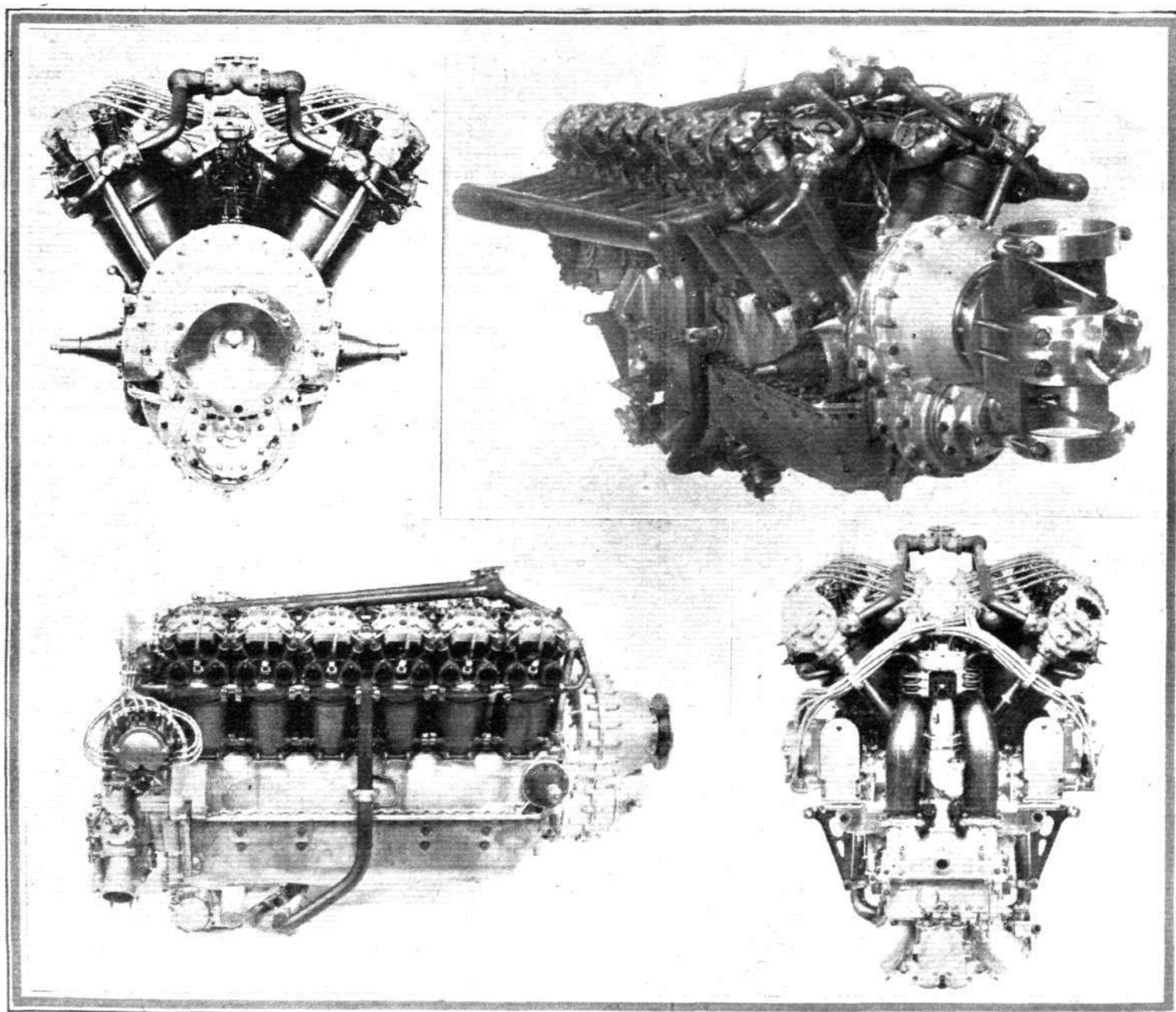
THE ROLLS-ROYCE "CONDOR," SERIES III

Many Special Features in Latest Type

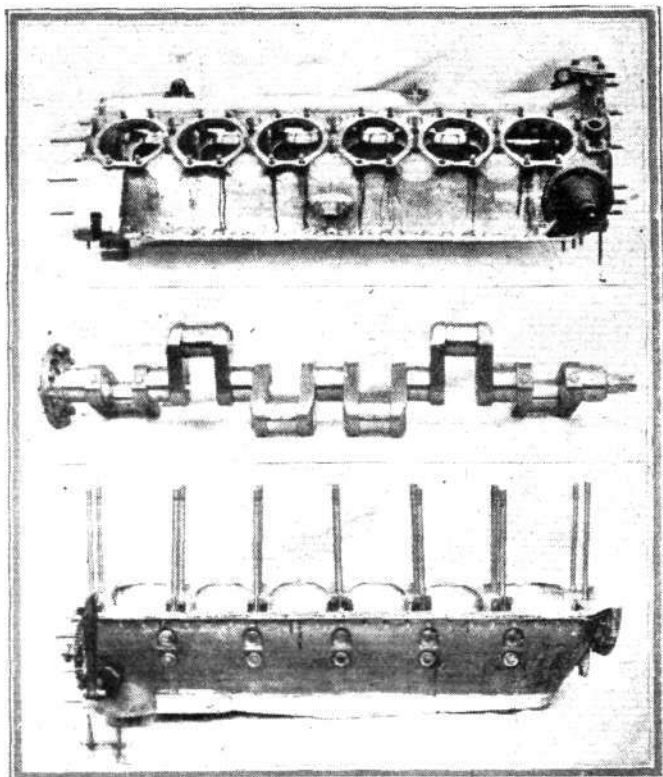
It would appear that among those not intimately familiar with British aero engine developments there is an impression that the latest type of Rolls-Royce aero engine, the "Condor" series III, is merely an overgrown "Eagle," and that, apart from the increase in size, there is little difference between the two types. Nothing could be further from the truth, and, as a matter of fact, almost the only similarity between the high-power engine and the type which has to its credit such famous flights as the transatlantic, the London-Australia, the England-South Africa, the Portugal-South America, and the round-Australia flights, is that both are of the twelve-cylinder V water-cooled type of aero engine. Detail similarities there are, certainly, and such features as have been found by long experience to give entire satisfaction have naturally been retained, but many innovations are to be found in the large engine, and certain very important changes in design have been made which are calculated to assist in carrying on the traditions of the famous house of Rolls-Royce in the best possible manner. As it is quite certain that the "Condor" is destined to take a prominent place in the future development of aviation, we have thought it of more than

ordinary interest to our readers to give a fairly detailed illustrated description of the latest type, the series III, and, thanks to the courtesy of the makers, we have been privileged recently to visit the works at Derby, where we were shown the engine in every detail and the processes of its manufacture. We have not here the space to go into details concerning the latter, but it may be taken for granted that the same meticulous care which has made the name of Rolls-Royce world-famous has been bestowed on the "Condor" aero engine.

In the space available in a single issue of *FLIGHT* it is scarcely possible to do justice to a piece of mechanism incorporating so many interesting features and which is the result of so much serious thought and experiment, as a modern aero engine, but it is hoped that the following notes will, at any rate, serve to give a reasonably clear picture of the main points in the design of the Rolls-Royce "Condor" series III, and for such details as we have perforce had to omit we would refer our readers to the manufacturers, who will always be pleased to supply to anyone seriously interested such further information as may be required. In the meantime we trust



FOUR VIEWS OF THE ROLLS-ROYCE "CONDOR" SERIES III ENGINE: The front view in the top left-hand corner gives a good idea of the small front area, and also shows the front engine supporting cones and the propeller flange. The rear view, in the lower right-hand corner, shows the twin carburettor, the induction pipes, and the distributor for the gas starter. In the top right-hand photograph the engine is shown fitted with a propeller centre for a two-bladed metal airscrew.

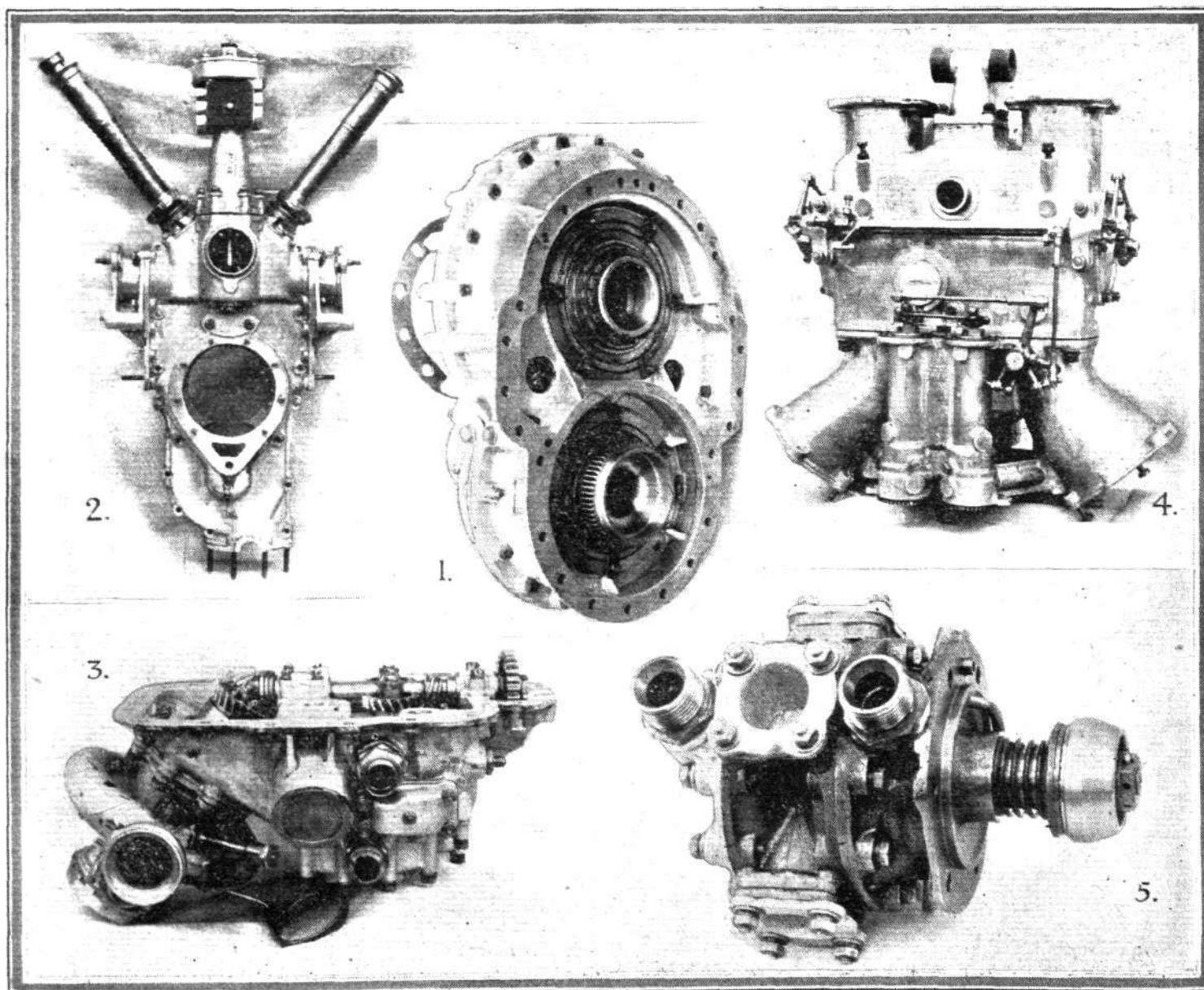


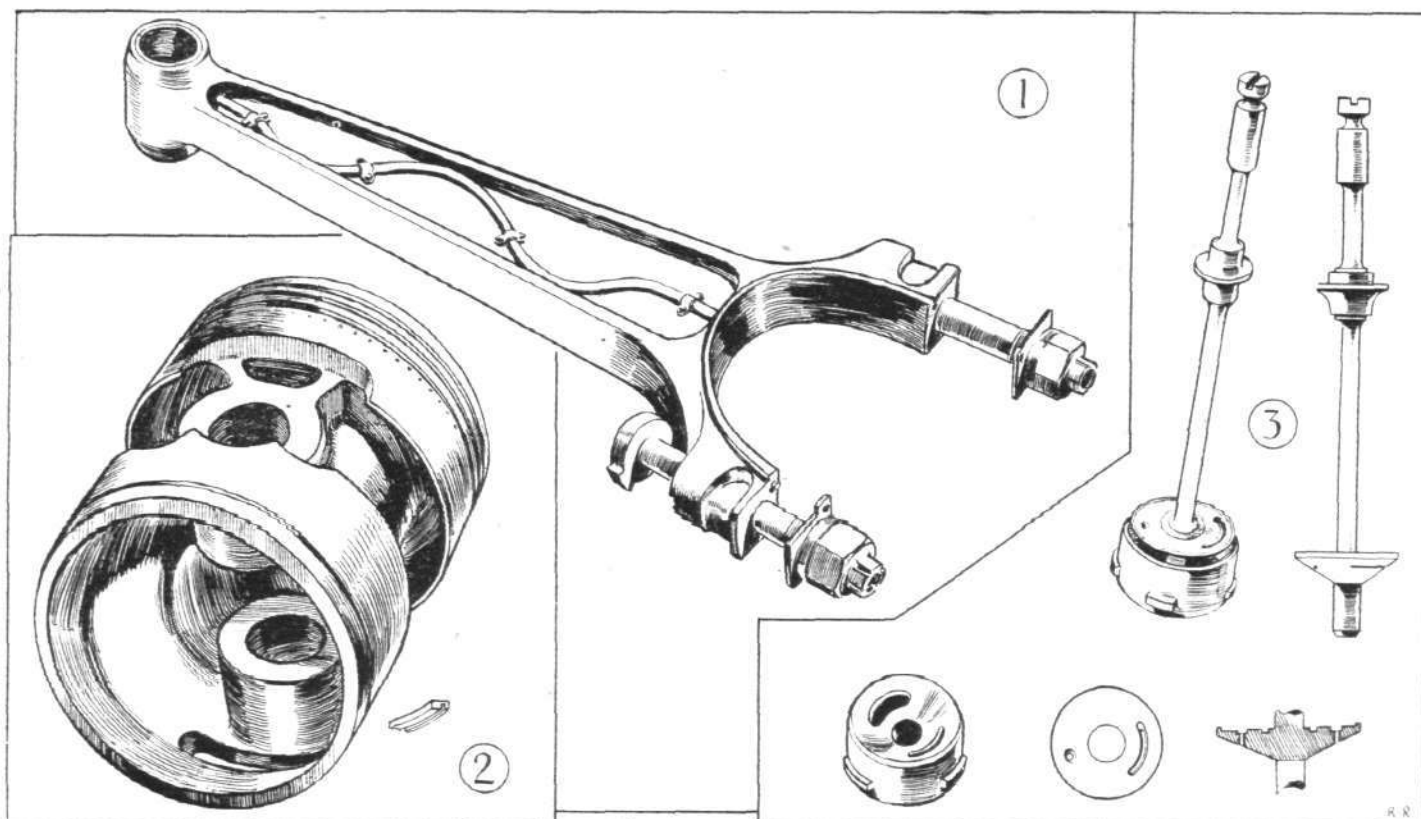
that such facts and figures as are presented below will be found sufficient for aircraft designers all over the world to determine for themselves whether the engine is suitable for any particular design which they may have in mind. The figures of weight, power output, fuel consumption, etc., in conjunction with the outline installation diagram, should be sufficient for "fitting-in" the engine for purposes of preliminary estimates, while the photographs and sketches should help to give a very fair idea of the detail construction.

Reference has already been made to the fact that the "Condor" series III differs very materially from the "Eagle" in many important respects, and before commencing to give a detailed description it may be of assistance to indicate briefly some of the special features which mainly distinguish it from previous types.

First and foremost, the system of suspension employed is entirely different from previous types, being practically the equivalent of a three-point suspension. The object is, of course, to lighten the mounting and to avoid taking torsional stresses on the crank-case itself. The carburettors are mounted in a very low position so as to facilitate the use of direct gravity feed from the main tanks, while the air intakes

The Rolls-Royce "Condor" Series III Aero Engine:
 Left.—Above, the top half of the crankcase. In the centre, the crankshaft. Below, the bottom half of the crankcase, showing long bolts securing the bearings. Below.—1. Back view of the airscrew reduction gear. 2. The casing and inclined shafts of the rear drive to all auxiliaries. 3. Water and oil pumps with their casing and skew gears. 4. The Rolls-Royce Claudel-Hobson twin carburettor. The throttle and ignition are inter-connected. 5. The 4-piston petrol pump.





1 shows a connecting rod, with the zig-zag oil pipe. 2, A "Zephyr" piston. 3, Details of the altitude control valve.

can be carried outside in such a way as to make them self-draining, thus reducing fire risk to a minimum.

The reduction gear is entirely different from that of the "Eagle," which latter is of the epicyclic type. In the "Condor" a single-spur gear reduction is fitted, bringing the centre of the airscrew upwards to a point almost exactly in the centre of the frontal area of the engine. Thus a very neat cowling can be employed. The gear reduction ratio has been chosen after very carefully going into the question of airscrew speed, and the ratio decided upon is 0.477, giving an airscrew speed at normal revolutions of 907 r.p.m.

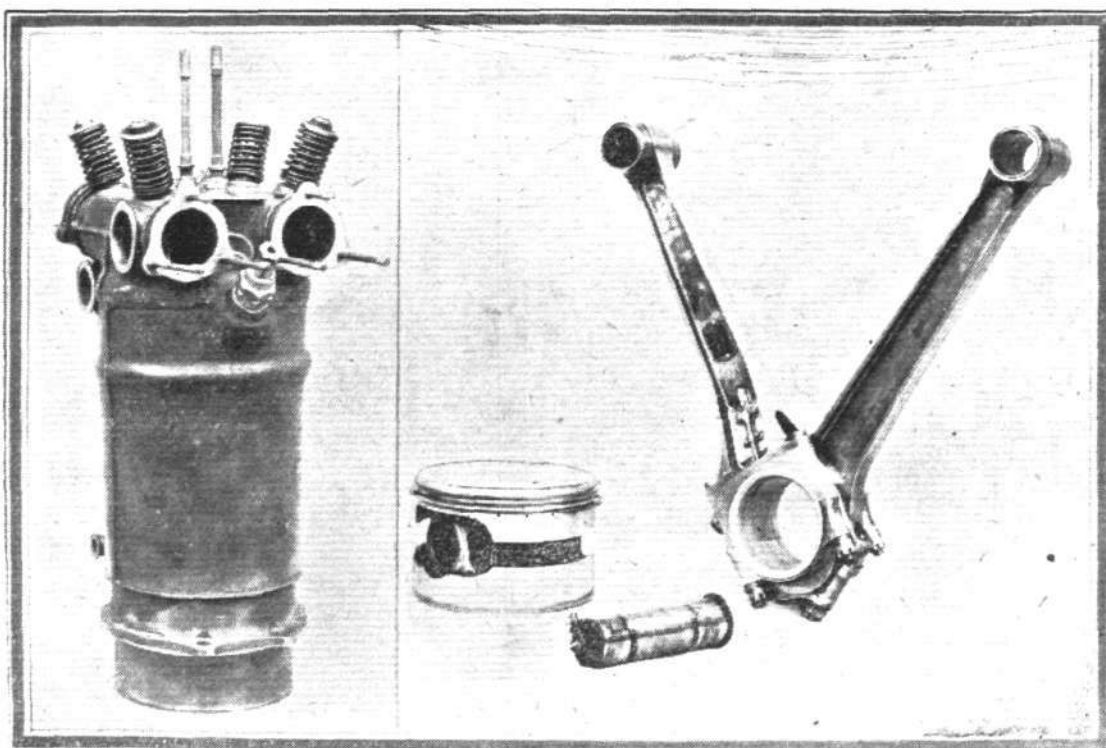
It has been arranged to use metal airscrews, and a very simple and light flange fixing has been arranged. An efficient airscrew for an engine of this size is about 16 ft. diameter, and if made of wood would obviously be difficult to handle, and even more so to transport. The metal airscrew, with its

detachable blades, offers a very considerable advantage in this respect. Last, but by no means least, the "Condor" is very economical in fuel consumption, the average during the 50 hours of the Air Ministry type tests being below 0.49 lb./b.h.p./hour. The weight works out at just a fraction over 2 lbs./b.h.p. at normal speed and power, and at even less if the estimate is based on full-power conditions.

Like all previous Rolls-Royce aero engines the "Condor" is of the 12-cylinder water-cooled "vee" type, with the cylinder banks placed at an angle of 60 degrees, and with overhead valves operated by overhead camshafts driven by inclined tubular driving shafts from the rear end of the crankshaft. The cylinders are separately mounted on the crankcase, and are of built-up all-steel construction. They are machined from 0.6 per cent. carbon steel forgings, with the heads integral with the cylinder barrels. The water jackets are

die-pressed steel, acetylene welded at the joints. There are four valves per cylinder, two inlet and two exhaust, and two sparking plugs per cylinder. The valves are of the "trumpet" type, and are made from special high chromium steel forgings. The valve seatings are machined in the cylinder heads, and the valve stems are divergent and require a special rocker mechanism.

The special rocker mechanism is shown in some of the accompanying sketches. It will be seen that to operate the divergent valves tappets are interposed between the cams and rockers, the latter being arranged to swing in a plane coincident with or parallel to the plane in which the valve of each lies. There are, it should be pointed out, but three cams for each four valves, the central cam and its tappets operating the two inlet valves, while the remaining

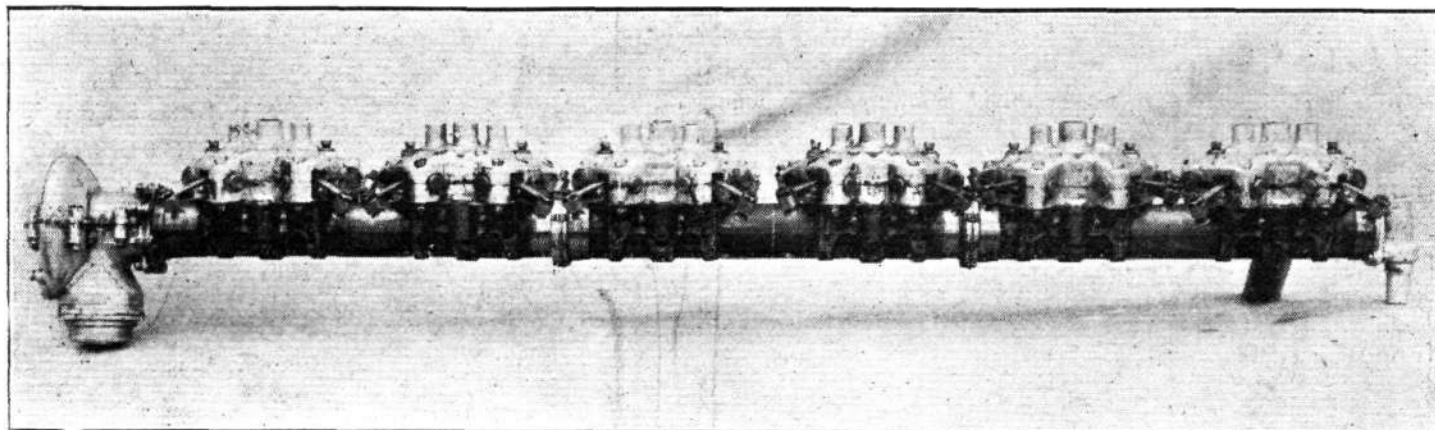


Cylinder, piston and connecting rod assembly of the Rolls-Royce "Condor" Series III engine.

two cams operate one exhaust valve each. The principle and most of the details should be clear from the accompanying analytical sketches. The casings containing the rockers, tappets, &c., are carried on two long bolts rising from the cylinder heads, the overhead camshafts passing between these bolts. The camshafts, incidentally, are enclosed in tubular steel casings carried between the valve cages and the rocker covers, and each camshaft runs in six aluminium bearings. These are of the split type, while the end bearings are of the

gudgeon pin and one at the base of the skirt. The upper and lower are scraper rings, while the middle are compression rings.

The connecting rod assembly is shown in some of our illustrations. It will be seen that here again there is a marked difference between the "Eagle" and the "Condor." In the former, it will be recollected, articulated rods are employed, while in the "Condor" the rods are forked, not only over the crank pins but also one of each pair over its

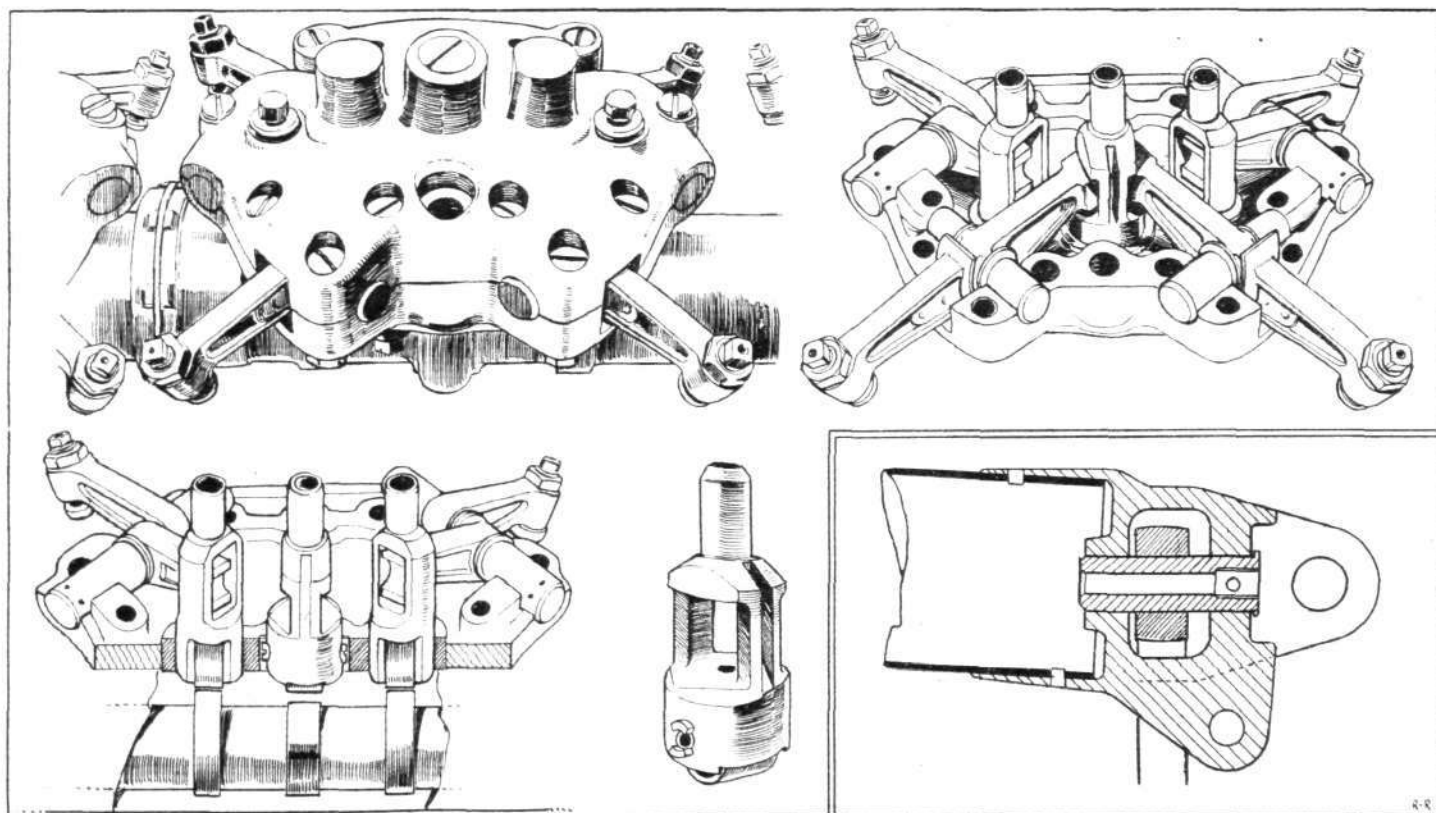


One of the overhead camshafts of the "Condor." Shafts and valve mechanism are supported by long studs from the cylinder heads.

one-piece type. The camshafts themselves are of 5 per cent. case-hardening nickel-steel bar, ground true on the bearing surfaces and cam faces.

As already stated, the camshaft drive is in the form of inclined tubular shafts with bevel gears at upper and lower ends, driven from the rear end of the crankshaft. Out-of-alignment and expansion effects are allowed for by hardened serrated couplings, and the inclined driving shafts are supported in ball bearings. The gears for driving the camshafts and all auxiliaries are driven from the rear end of the crank-

mate. The rods are of "H" section, and are made from $3\frac{1}{2}$ per cent. nickel steel forgings, heat treated to give a high Brinell number, and machined all over to reduce weight variations. A divided white-metal lined steel block is bolted to the forked rod, and the plain rod works on the centre portion of the steel block, the latter having a white-metal bearing surface. The small ends of both rods are fitted with floating phosphor bronze bushes. All bearings are positively lubricated under pressure, and in the case of the connecting rod ends it will be seen that the oil is carried by a small tube



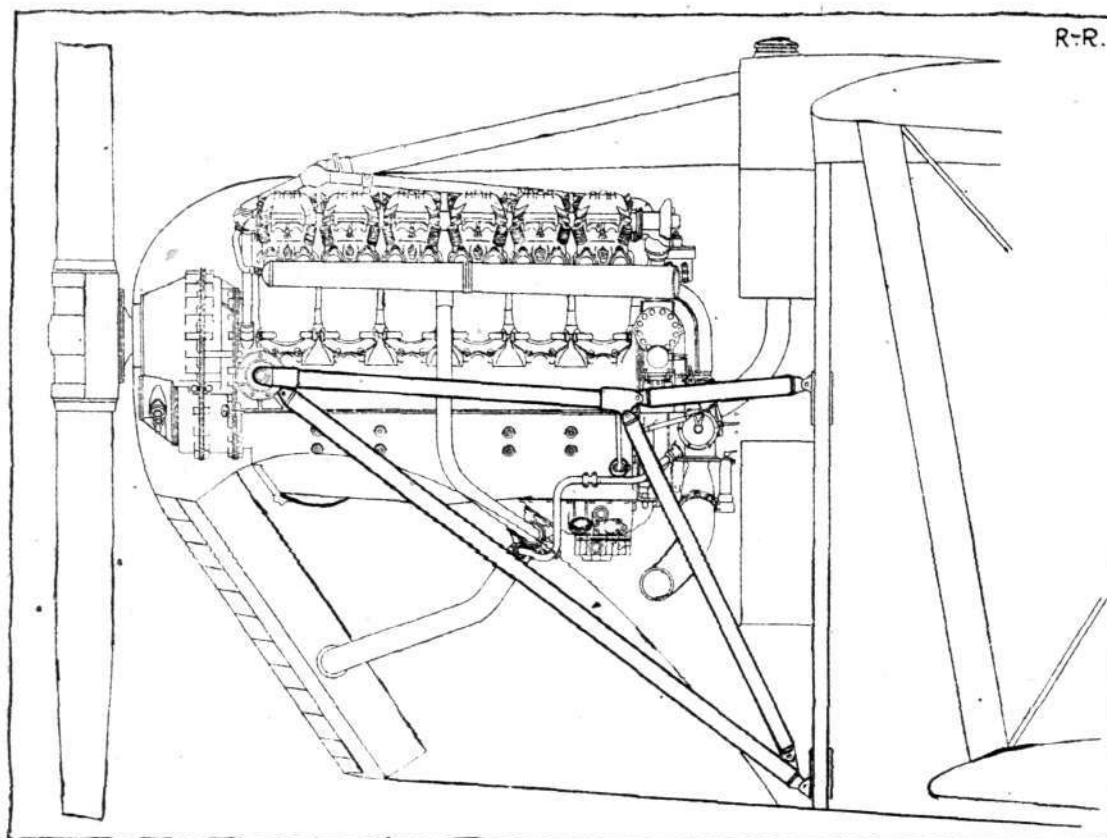
Analytical sketch of the rocker mechanism, tappets, etc. Inset, a suggested mounting arrangement allowing for longitudinal expansion.

shaft through the medium of a spring-controlled friction-damped pinion, which eliminates crankshaft torsional vibration from all auxiliary drives.

The pistons are made of a special aluminium alloy, and are of the "Zephyr" type, for which it is claimed that the crown is better supported while the cooling of the head is considerably improved. There are four piston rings, three above the

which is given a series of zig-zag bends in order to relieve the stresses in it.

The six-throw crankshaft is machined from a nickel chrome steel forging, and all journals and crankpins are bored for lightness and to convey oil to all bearings. Crankpins and journals are ground to close limits for size, and the shaft is carried in seven plain bearings of generous proportions. The



**Suggested
 mounting for
 Rolls-Royce
 "Condor"
 engine.**

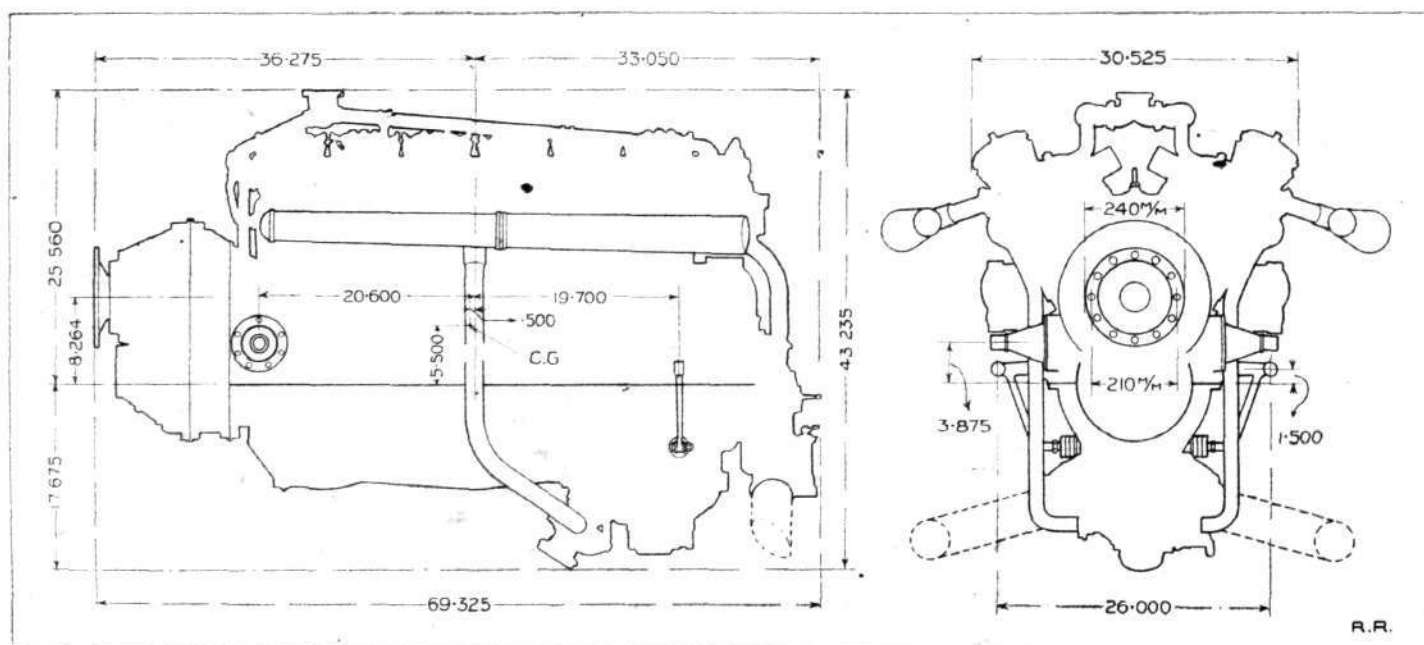
bearings consist of divided phosphor-bronze shells, lined with white-metal.

The crankcase is of special aluminium alloy, and is made in two halves joined along the centre-line of the crankshaft. The upper half is arched, and carries the cylinders, etc., while the lower half is trough-shaped. Long bolts pass through both halves, two at each main bearing. The lower half carries at the rear end the three oil pumps and one water circulating pump. These are driven from the timing gear by a shaft. It might be mentioned that there are two scavenger pumps, one drawing oil from each end of the crankcase, and one pressure pump forcing the oil from the tank to the bearings. In this connection it might be mentioned that in the "Condor" a single-pressure system has been adopted, the camshafts being lubricated under the same pressure as the main bearings. This avoidance of two systems, a high-pressure and a low-pressure, naturally results in greater simplicity, and on that score, as well as on certain others, has a not inconsiderable advantage over the hitherto usual two-pressure system.

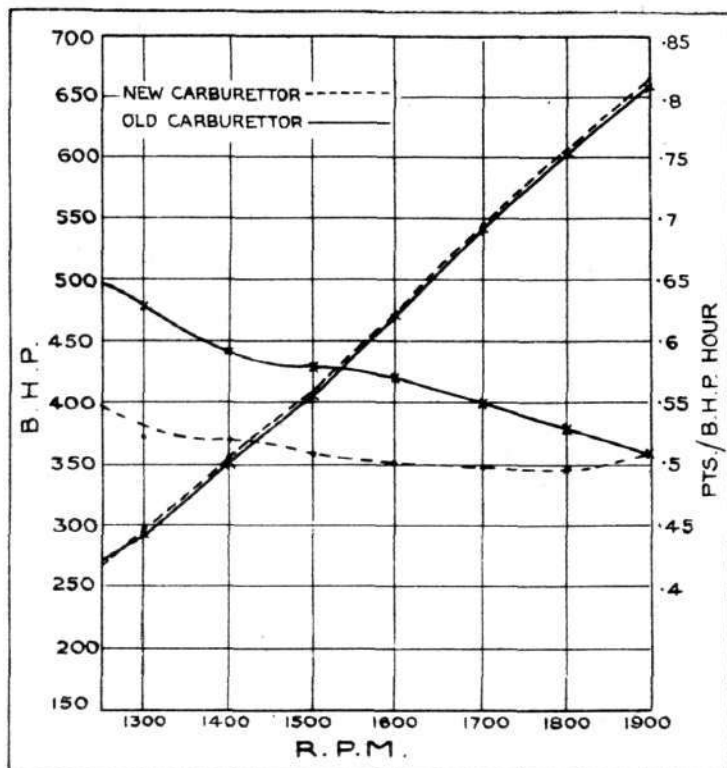
The pressure employed is fairly high, something like 93 lbs./sq. in. we believe. The scavenger pumps each have a coarse oil filter, but the main filter for the pressure pump is supplied as a separate unit which can be mounted on the machine in an accessible position and readily taken to pieces for inspection and cleaning.

A centrifugal water circulating pump is fitted below the bottom half of the crank-case. In some of the photographs the outer stator casing can be seen. The impeller, or rotor, is not cast, as is usually the case, but is built-up from brass sheet. This form of construction has resulted in a considerable saving in weight. All water pipe connections are provided with special joints in which rubber rings work in compression, and which are, moreover, almost entirely shielded from the light, so that there should be no trouble with leaky water joints.

The twin carburettor is of the Rolls-Royce Claudel-Hobson type, and is, as previously mentioned, mounted in a very low position so as to facilitate gravity feed. A special



Dimensioned sketch-diagram of the "Condor," giving some of the more important measurements. Other details are shown in the drawing of a suggested mounting given above.



Throttled power and consumption curves of the Rolls-Royce "Condor," with old and new type of carburettor. The power, it will be seen, is not affected, while a very great improvement has been effected in the consumption when throttled down, a matter of great importance in civil aviation when flying at cruising speed.

form of altitude control has been evolved for the "Condor," in which a conical rotating valve rotates in a conical seating ground to fit. The seating has two fairly wide slots, while the valve has two small holes, diametrically placed, from one of which runs a hair-thin circumferential slot. This valve is incorporated in a lead between float chamber and jet, and by rotating the valve the pilot regulates the amount of petrol allowed to run from float chamber to jet. The reason for a single slot instead of two placed symmetrically is that it would have been almost impossible to make the slots sufficiently narrow. The new type of altitude control would appear to be of very simple and robust form, as there does not seem to be anything in it which could possibly go wrong. Special compensating passages are provided in the carburettor which maintain under all conditions the same pressure in the float chamber as in the throat, thus neutralising eddy-current effects. The induction pipes are of large diameter and are formed with easy bends. They are water-jacketed at the carburettor end. The air intakes are bolted to the lower end of the carburettor, and can be easily brought right outside the engine cowl, and as the system is self-draining there should be very little chance of fire. Above the carburettor is mounted a distributor for use in conjunction with a gas starter, pipes running from the distributor to all the cylinders.

It may be mentioned that the throttle and ignition controls have been interconnected in such a way that the spark is advanced as the throttle is opened, up to about three-quarter full throttle. Then a further advance of the throttle lever slightly retards the spark. The main throttle is also connected to the altitude control in such a way that the pilot, in throttling down, automatically closes the altitude compensator, which latter cannot, therefore, accidentally be left "on." Another advantage of this arrangement is that but two engine controls have to be taken through the fire-proof bulkhead.

While it has been stated that the "Condor" is particularly suitable for direct gravity feed, there must of necessity be cases when this cannot be employed, and a special form of petrol pump has been evolved which can be supplied at an extra charge. This pump, of which an external view is given, is designed to be driven by the engine. It has four pistons, operating somewhat on the principle of a single-sleeve valve engine in that the pistons have a rotary movement, in addition to their reciprocating motion. Ports cut in the sides of the four pistons transfer the petrol.

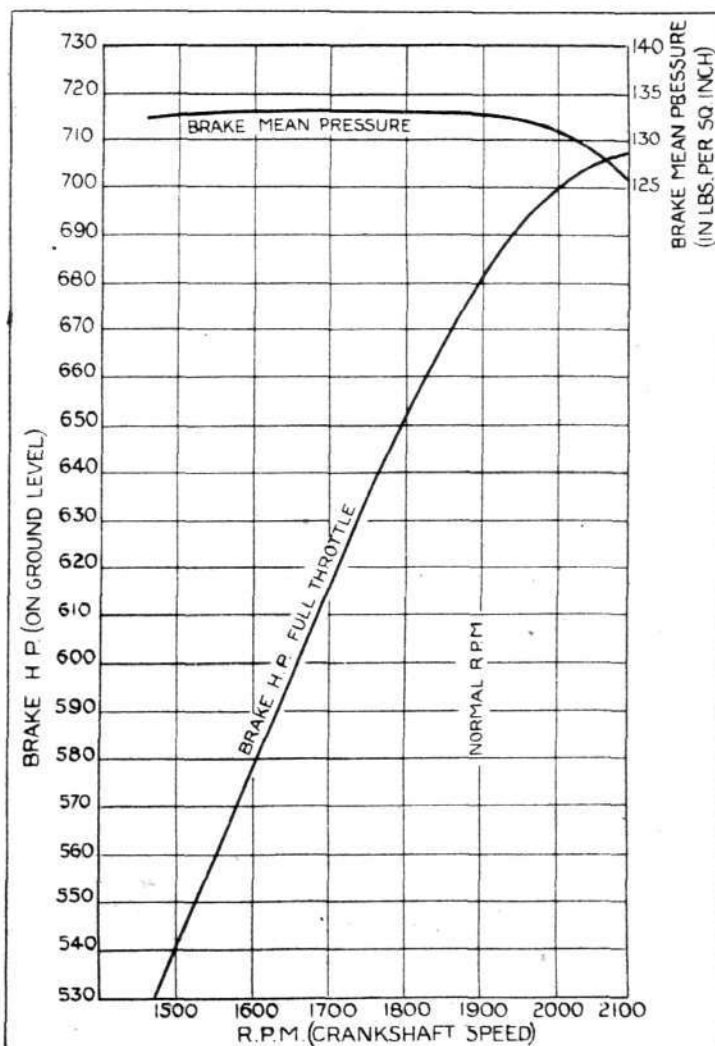
Mention has already been made of the fact that the reduc-

tion gear is of somewhat unusual type. The single spur-gear reduction is fitted at the front end of the crankshaft. The pinion is driven from the shaft through a short shaft having teeth at the inner end to engage an internally-toothed flange bolted to the crankshaft, and at the outer end teeth engaging with teeth cut inside a part of the gear pinion. It is claimed that the use of this shaft prevents loads from the gear pinion coming on to the crankshaft. The gear wheels are carried in large-size roller bearings mounted in a substantial cast aluminium case. The airscrew shaft is of large diameter, and made of nickel chrome steel and is flanged at the front end to take a metal airscrew. No airscrew boss is supplied.

One of our photographs shows the engine with a suitable airscrew centre in place. These centres can be supplied to take two, three or four metal blades. A special machine-gun interrupter gear has been designed for use with the "Condor" and is mounted just below the airscrew shaft.

Two 12-terminal B.T.H. magnetos are fitted, and are supported on the auxiliary gear case, from which they are driven by means of serrated couplings. Two sparking plugs are fitted to each cylinder.

The mounting of the Rolls-Royce "Condor" series III is of unusual type in that no longitudinal bearers are required. Near the front corners of the upper half of the crank-case are two cylindrical lugs cast integral with the crank-case, and to these are bolted conical steel trunnions, that serve as supports for the front part of the engine. The rear supports are in the form of two cranks, whose lower arms are connected by a bar running through the crank-case. Short rubber buffers are incorporated so as to allow of a certain amount of play. The outer, or free, ends of the cranks are bolted to the aeroplane framework. It will be seen that torsional stresses are taken at a point very close to the airscrew, and that a minimum of stress is transmitted through the crank-case. The rear system of links is similar to that used for a long time on Rolls-Royce cars, and is the equivalent of three-point suspension.



Full-throttle curve of the Rolls-Royce "Condor" Series III aero engine. The engine from which this curve was obtained had a compression ratio of 5.3 to 1; the atmospheric temperature was 16 degrees C., and the pressure 29.97 inches of mercury.

With regard to power output and fuel consumption, we give two sets of curves, one full-power curve from type tests and another, a throttle curve, which shows how, by the special compensating passages in the carburettor, it has been found possible to secure good fuel economy at cruising speed. The full-throttle curve indicates that, although the rated power at the normal speed of 1,900 r.p.m. is only 650 b.h.p., the engine under test actually developed, at that speed, about 682 b.h.p., with a maximum power of 708 b.h.p., at 2,100 r.p.m. The throttle curve does not include the extremely low speeds, at which the fuel consumption curves become somewhat erratic, but as an aero engine is never run at these low speeds for any length of time the consumption is unimportant. At higher speeds, and up to the maximum, the consumption, it will be seen, is extremely low for the throttled condition, and this

desirable feature is attained without interfering with the power output.

Following is a brief specification of the Rolls-Royce "Condor" series III: Number of cylinders, 12; bore, 5½ ins.; stroke, 7½ ins.; normal b.h.p., 650; normal speed (crankshaft), 1,900 r.p.m.; maximum speed (crankshaft), 2,100 r.p.m.; normal speed (propeller), 907 r.p.m.; fuel consumption at normal power and speed, 45 gallons per hour; oil consumption, 1.9 gallon per hour; weight of engine, 1,154 lbs. (This figure includes carburettors, magnetos, engine feet, distributor and pipes for gas starter, etc., but excludes reduction gear, exhaust boxes, radiator, airscrew, oil, fuel and water.) The weight as above, but including reduction gear, is 1,310 lbs., while the weight all included, except radiator, airscrew, water, oil and fuel, is 1,336 lbs.

AIR NAVIGATION ACT AMENDMENTS

THE Air Ministry has just issued the following amendments to Air Navigation Directions, which apply specially to Medical Requirements:—

Directions.—1. The Air Navigation Directions, 1922 (A.N.D. 3), as amended by the Air Navigation Directions, 1923 (A.N.D. 3A), by the Air Navigation Directions, 1924 (A.N.D. 3B) and by the Air Navigation Directions, 1924 (A.N.D. 3C), are hereby further amended as follows:—

(1) For paragraphs 48 to 53A (both inclusive, and including the heading "Medical Requirements") the following provisions are substituted:—

"MEDICAL REQUIREMENTS."

"(I) Private Pilot's Licence."

"48. A person applying for the grant or renewal of a pilot's licence to fly flying machines other than flying machines carrying passengers or goods for hire or reward (*i.e.*, a 'Private Pilot's Licence' as referred to in paragraph 55 hereof) will be required to undergo a medical examination by a duly qualified medical practitioner, who may be the applicant's usual medical attendant. Such examination shall be conducted in accordance with C.A. Form 61, and a copy of that form, completed as required, shall be forwarded by the medical examiner to The Secretary (D.C.A.), Air Ministry, London, W. C. 2 (by whom copies of the form will be supplied on application).

"(II) Pilot's Licence for Passenger or Goods Aircraft and Navigator's Licence."

"49. In the following paragraphs 50 to 53B the word 'licence' means a pilot's licence to fly aircraft carrying passengers or goods for hire or reward or a licence to navigate aircraft.

"50. A person applying for the grant of a licence will be required to undergo medical examination as follows:—

"(a) A preliminary examination, conducted either by a duly qualified medical practitioner, who may be the applicant's usual medical attendant, or by specially qualified medical officers in conjunction with the special examination referred to in (b) below.

"(b) A special examination conducted by specially qualified medical officers appointed by or acting under the authority of the Secretary of State.

"50A. *Preliminary Examination.*—This will be based on the following requirements:—

"The applicant must be of the male sex, must have the complete use of his four limbs, must not be completely deprived of the use of either eye, and must be free from any active or latent, acute or chronic, medical or surgical, disability or infection. He must be free from any injury or wound which would entail any degree of functional incapacity which might interfere with the safe handling of aircraft at any altitude, even in the case of prolonged flight. He must be completely free from hernia, must not suffer from any detectable sensory lesion, and must be free from a history of morbid mental or nervous trouble.

"Except where the examination is conducted by specially qualified medical officers, it shall be conducted in accordance with C.A. Form 69, and a copy of that form, completed as required, shall be forwarded by the medical examiner to the Secretary (D.C.A.), Air Ministry, London, W.C. 2 (by whom copies of the form will be supplied on application).

"50B. *Special Examination.*—This will be based on the following requirements:—

"(a) Good family and personal history, with particular reference to nervous stability, as to which information shall be given in a statement made and signed by the applicant and satisfactory to the examining officer. Absence of any

mental, moral or physical defect which will interfere with the safety of air navigation.

"(b) Pilots of aircraft carrying passengers or goods for hire or reward and navigators may not enter upon their duties before 19 or after 45 years of age.

"(c) *General Surgical Examination.*—The applicant must neither suffer from any wound or injury, nor have undergone any operation, nor possess any abnormality, congenital or acquired, which might interfere with the safe handling of aircraft at any altitude, even in the case of prolonged or difficult flight.

"(d) *General Medical Examination.*—The applicant must not suffer from any disease or disability which renders him liable suddenly to become incompetent in the management of aircraft. He must possess heart, lungs and nervous system in a state to withstand the effects of altitudes and also the effects of prolonged flight. He must be free from kidney disease, and must not present any clinical signs of syphilis, nor have any cardiac lesion, even if well compensated.

"(e) *Eye Examination.*—The applicant must possess a degree of visual acuity compatible with the efficient performance of his duties. Pilots and navigators must possess visual acuity equal to 100 per cent. for each eye taken separately and without correction by glasses, the visual acuity being measured by means of a powerful illumination not shining directly into the eyes of the examinee. Binocular vision, ocular poise, the field of vision of each eye and colour perception must be normal.

"(f) *Ear Examination.*—The middle ear must be healthy. The applicant must possess an auditory acuity not less than that corresponding with the normal perception of the tuning forks C (1) 64 vibrations per second, C (3) 256 vibrations per second, and C (7) 4096 vibrations per second, the forks being held perpendicularly to the ground 1 centimetre from the auditory tube. The vestibular mechanism must be intact and not hypersensitive; it must be equal on both sides.

"(g) *Nose, Throat and Mouth Examination.*—The applicant must possess free nasal and tubal air entry on both sides and must not suffer from serious, acute or chronic affections of the buccal cavity or upper respiratory tract.

"51. A person applying for the renewal of a licence will be required to undergo a medical examination conducted by specially qualified medical officers appointed by or acting under the authority of the Secretary of State, which examination will be based on the requirements set out in paragraph 50B.

"52. An applicant who satisfies the medical requirements will receive a medical certificate of acceptance, which must be produced before the licence can be granted or renewed.

"53. In order to ensure the maintenance of efficiency, every holder of a licence shall be re-examined periodically as follows, *viz.*, in the case of a pilot, each time he completes 250 hours' flying, provided that not more than six months shall elapse between two successive examinations, and, in the case of a navigator, at least every six months.

"53A. In case of illness or accident, the holder of a licence shall be re-examined and pronounced fit before resuming air duties.

"53B. The date and result of each re-examination, whether for the purpose of renewal of the licence or in consequence of illness or accident, will be recorded on the licence.

"53C. A person who was qualified before January 1, 1919, as a pilot or navigator, and who was on July 1, 1922, employed as a pilot or navigator by a public air transport company may, at the discretion of the Secretary of State, continue to be licensed so long as his physical capacities as ascertained at his last medical examination are maintained, unless there is

detected a pathological defect capable of causing a sudden accident.

"53d. Applications for official medical examination should be made to The Secretary (D.C.A.), Air Ministry, London, W.C. 2."

(2) In paragraph 61 :—

(i) The words "or renewal" are inserted after the word "issue" in sub-paragraph (a).

(ii) The following new sub-paragraph is added after sub-paragraph (b) :—

"(c) A candidate for the renewal of a licence will be required to produce proof of recent reasonable flying experience on the class of flying machines for which the renewal is required, or, failing such proof, to undergo practical tests."

2. These Directions may be cited as the Air Navigation Directions, 1924 (A.N.D. 3d).

3. These Directions shall come into operation forthwith.

LIGHT 'PLANE AND GLIDER NOTES

Those wishing to get in touch with others interested in matters relating to gliding and the construction of gliders are invited to write to the Editor of FLIGHT, who will be pleased to publish such communications on this page, in order to bring together those who would like to co-operate, either in forming gliding clubs or in private collaboration.

SUPPLEMENTARY Regulations III of the two-seater light aeroplane trials to be held, under the competition rules of the Royal Aero Club, from September 29 to October 4, at the Lympne (Kent) aerodrome, have now been issued, and were published in abridged form in FLIGHT last week under the Official Notices of the Royal Aero Club. The regulations do not modify to any extent those previously published (FLIGHT, March 6 and April 3 1924), but are rather to be regarded as an elaboration of the announcements already made. In the main the regulations are very clearly and concisely worded, and the rules under which the competitions are to be held will be fairly obvious from a perusal of the regulations published last week.

THE holding of eliminating tests on Saturday, September 27, and Sunday, September 28, i.e., before the opening of the actual competitions, has for its object to test the possibility of dismantling, transporting and re-erecting the machines within a period of two hours. This test is not likely to cause any difficulty on the part of competitors, and it might perhaps be justly claimed that if this section of the rules errs at all it is on the side of leniency. It is a matter of some importance to be able quickly to dismantle a sporting aeroplane, and in Germany much greater stress appears to be laid on this feature than we have ever done in this country. Quick-release attachments are not really difficult to arrange, and it would not appear to have been asking too much to demand that this test should be gone through within half an hour.

THE second test in the eliminating trials consists in flying two separate laps of the course, with ballast carried to represent the passenger. In these tests the pilot must occupy alternately the front and rear seat in order to demonstrate that the machine can be piloted from either, as it should be capable of in a dual-control school machine. Here again there is nothing very difficult, and the stipulation that machines must definitely have completed the two eliminating tests during the two days mentioned or else be disqualified should act as a very effective spur to competitors to be ready on time. Otherwise there is always a tendency for machines to come trickling along during the whole week, and there is nothing to prevent a competitor from arriving late and, by strenuous flying during the last two days, win the prize. This year one will at least have the satisfaction that all serious competitors will be at Lympne by the week-end preceding the competitions.

TURNING now to the competitions themselves, these are mainly for speed range, although marks are also to be gained in the getting-off and pulling-up tests. The scope for the gaining of marks in this section is, however, relatively unimportant compared with that in the speed-range tests. For the benefit of those who do not happen to have by them previous copies of FLIGHT containing rules, etc., it may be of interest to give a brief outline of the rules. The speed range test will consist of two separate sections—the high-speed and the low-speed test. The former will be flown over a triangular course of approximately 12½ miles (20 kilometres), and two separate flights must be made, a landing being made between them for the purpose of filling up with petrol and oil only. In each flight, as the total distance to be covered is 75 miles, competitors will make six laps of the triangular course, and will then land and fill up, after which

they will fly another six laps. Competitors will be allowed to make as many attempts as they wish, but the rules do not specifically state whether in case a competitor has successfully completed one set of six laps but has to retire during the second set of six, he will be allowed to count the first and successful six as one flight and the first six of a second attempt as the second. Presumably, however, this will not be permitted, and if a competitor fails during his second flight he will probably have to make an entirely fresh attempt. The completed laps will, of course, count in the reliability tests for greatest number of circuits completed. The actual course has not yet been announced, but it seems likely that this will be the same as that used in last year's competitions, with which many of the competing pilots will doubtless be almost painfully familiar. At any rate Bert Hinkler has been over this course 80 times, and would probably be able to fly it blindfolded.

THE low-speed test is to be flown backward and forward over the aerodrome, the course being a straight line one of not less than 500 yards in length and 25 yards wide. Competitors will be timed up and down the course, and the average speed of the four flights will be taken. The machines are to fly at a constant height of not more than 20 ft., and must enter the course within five minutes of their starting time. If a large number of machines is entered it would seem likely that the low-speed course is likely to be kept busy, especially as all competitors will naturally be anxious to go through the test whenever conditions are favourable. While the supplementary regulations state that competitors will be at liberty to make as many attempts in the high-speed test as they like, no such statement is made with regard to the low-speed test. It is stated, however, that the stewards will decide when competitors may go for low-speed tests, and that all competitors will be allowed the same number of attempts. Perhaps it will become necessary to decide the order of starting in this test by drawing lots, and, therefore, luck will play a not unimportant part, and it almost appears impossible to ensure that every competitor is given a fair chance. It is scarcely to be expected that an absolute calm will occur, of sufficient duration for all competitors to go through the low-speed test, and variations in wind velocity during the flights of the various competitors would be likely to influence the results to a considerable extent. The ideal would, of course, be a flat calm, but failing that the next best would seem to be a wind parallel to the course. This would not affect the results at all, as competitors are to be timed on both outward and homeward laps. A wind at right angles to the course would lower the speeds made good over the course, and would reduce the actual flying speed on both outward and homeward laps, thus giving a lower minimum speed than that of which the machine was actually capable. If one competitor had the benefit of this "right angle" wind and another had to fly his tests in a "parallel" wind, injustice would obviously be done to the latter.

ON this question of flying the various tests in a wind, a correspondent has rather taken us to task over some remarks published in these notes in our issue of July 17. "I notice," our correspondent writes, "that you have assumed that the high-speed test is flown in a wind and the low-speed one in still air. You point out that a strong wind during low-speed test would 'tend to improve matters,' yet you convey the impression that the wind has a detrimental effect on the marks awarded." In our defence we must state that what we had in mind was a wind at right angles to the low-speed course, which would, as we have just pointed out, give a lower minimum figure, and thus result in a gain in marks. Certain other remarks in our correspondent's letter now no longer apply, the announcement having been made that the high-speed course will be a triangular one.

THE Air Ministry prizes, a first prize of £2,000 and a second prize of £1,000, for the largest and second largest number of marks awarded will be given primarily for speed range and secondarily for getting off and pulling up. In the speed-range competitions marks will be awarded according to the

formula $\frac{v_{\max} - v_{\min}}{v_{\min}} - 0.333$, eight marks being

awarded for each 1 per cent. or fraction thereof by which the speed-range exceeds 33½ per cent. The maximum speed must be not less than 60 m.p.h., and the minimum speed not more than 45 m.p.h. A machine with a maximum speed of 80 m.p.h. and a minimum speed of 30 m.p.h. will thus be awarded 1067.2 marks. It will require a very excellent machine to attain this figure.

COMPARED with the speed-range awards, the number of marks that may be gained in the getting-off and pulling-up tests is not of vast importance. In the former competitors will have to clear a barrier 25 ft. high, and one mark will be awarded for every yard by which the distance required to clear the obstacle is less than 450 yards. Thus, if a competitor succeeds in getting his machine off and clears the barrier in 150 yards he will receive 300 marks. Remembering the length of run and angle of climb of some of last year's single-seaters it does not seem likely that many marks will be gained in this test. In this test the competitors must start from rest, this stipulation obviously having for its object to prevent competitors from "taking a run" at the barrier.

THE pulling up test is of a somewhat similar nature, and consists in getting into an imaginary aerodrome over a hedge or other obstacle, represented in some manner not dangerous to machines, 6 ft. high, and coming to rest within the shortest possible distance from the barrier. One mark will be awarded for every yard by which this distance is less than 150 yards. The regulations state that straight landings must be made, but the interpretation of the term "straight landing" is not at all clear. For instance, will a side-slip landing be permitted? The statement that "only normal straight landings will be measured" seems to indicate that a side-slip landing is ruled out. If that is the case it seems obvious that "tail-swinging" will certainly also be *verboten*, and yet it might be a matter of some difficulty to decide whether or not a machine was doing a little of both in coming in. No mention is made of the manner of approaching the barrier. For instance, it would probably pay competitors to fly with their wheels just clear of the ground until close to the barrier, and then to "hoick" the machine over it, but there is no indication of whether or not such approach will be permitted. Certain details of these tests are somewhat vague in the regulations, but, doubtless, they will be made abundantly clear later on.

IN addition to the marks obtained in these competitions, the winners of which will be awarded the Air Ministry Prizes, there is a prize of £500 offered by the Duke of Sutherland, with a second prize of £100 offered by Capt. Wilson, for the highest and next highest number of marks respectively obtained in the get-off and pull-up tests, so that, in spite of their relatively small importance in the Air Ministry scheme of things, these features will count a good deal. Furthermore, His Grace has intimated his intention to purchase one of the competing machines, although this will not necessarily be the winning type. There should, therefore, be a good deal of friendly rivalry between competitors for the honour of supplying a light 'plane two-seater to the Duke of Sutherland, to whose initiative is to a large extent due the fact that we possess light aeroplanes today. It will be recalled that His Grace was first to offer a prize for light 'planes last year.

THE Society of Motor Manufacturers and Traders, and the British Cycle and Motor Cycle Manufacturers' and Traders' Union each offer a prize of £150, to be awarded to the competitor who covers the greatest number of complete circuits of the competition course. Last year, it will be remembered, Mr. Bert Hinkler completed 80 laps of the course, covering a total distance of 1,000 miles during the Lympne week. This year it is stipulated that competitors must complete at least

10 hours' flying in order to be eligible for the prizes, although it is also stated that for the two prizes of £150 just mentioned a minimum distance of 400 miles must be flown. It is not likely that any of the competing machines will cover less than 400 miles in 10 hours' flying, so that the reason for this minimum figure is not very apparent.

FINALLY, it may be recalled that the entries list will be closed on August 22, but that late entries will be received at double fee up to September 5.

THE French *Tour de France des Avionnettes* does not seem to be meeting with any very great success. Out of the 15 machines entered only three started in the actual competition, and of these but two succeeded in completing the first stage, Buc to Clermont-Ferrand, a distance of 340 km. (212.3 miles), and only one, up to the time of writing, has covered the second stage, Clermont-Ferrand to Valence. The main reason for the poor showing is that on the days set aside for the eliminating trials atrocious weather prevented many of the competitors from flying, while others crashed their machine in desperate attempts to get through the tests in spite of the bad weather.

IN spite of the fact that we have now come to the verse ending "and then there was one," it may be of interest to give a list of the entries, and a brief indication of what happened during the earlier stages of the competition. This we were prevented from doing in last week's issue, owing to the fact that lack of space necessitated holding over "Light 'Plane and Glider Notes."

AFTER drawing lots for numbers, the competitors in the *Tour de France* were arranged as follows:—

No. 1, Demonty-Poncelet, Gregoire engine; pilot, van Opstal. No. 2, Beaujard-Viratelle, Sergeant engine; pilot, Beaujard. No. 3, Vliegtuig-Industrie "Holland," Anzani engine; pilot, Hofstra. No. 4, Pierre Carmier, Anzani engine; pilot, Carmier. No. 5, Vliegtuig-Industrie "Holland," Anzani engine; pilot, Jaubert. No. 6, Dewoitine, Vaslin engine; pilot Thoret. No. 7, Simonet, Sergeant; pilot, Victor Simonet. No. 8, Farman, Anzani engine; pilot, Landry. No. 9, Ligreau, Ligreau engine; pilot, Georges Ligreau. No. 10, Milos Bondy "Avia," Blackburne engine; pilot, Stanovsky. No. 11, Farman, Anzani engine; pilot, Drouhin. No. 12, Blériot Aéronautique, Blackburne engine; pilot, Rabatel. No. 13, Dewoitine, Vaslin engine; pilot, Doret. No. 14, Dewoitine, Vaslin engine; pilot, Gaulard. No. 15, Milos Bondy "Avia," Vaslin engine; pilot, Lhota.

DURING the days set aside for the eliminating trials the weather was so boisterous that most of the competitors decided against bringing their machines out, while others who did try had the misfortune to crash. The only three machines out of the 15 entered to pass the eliminating tests were the Farman monoplane, piloted by Drouhin; the Blériot, or rather A.N.E.C., piloted by Rabatel; and the Carmier, piloted by Carmier.

ON the first day of the actual competition the three machines left Buc on the first stage, to Clermont-Ferrand, 340 km. away. Only two of them arrived, Rabatel having had to make a forced landing at Nevers (the name seems ominous). The best time was made by Carmier, whose lapsed time was 7 hrs. 2 mins. His actual flying time was considerably less, as he, like Drouhin, had to make a halt at Etampes on the way. Drouhin's lapsed time was 7 hrs. 21 mins.

AFTER a day's rest, as prescribed, at Clermont-Ferrand Drouhin and Carmier were ready to start, on July 29, but mist and wind kept them on the ground until 4.20 p.m., when both got away together. Drouhin carried on, and reached Valence at 6.12, while Carmier had to return, owing to a broken oil pipe. Thus Drouhin became the sole competitor over the second stage, as well as over the third, to Nîmes. The fourth stage, to Toulouse, was commenced according to schedule by Drouhin, but he had to make a forced landing at Carcassonne.

HONOURS

IN the *London Gazette* of July 29, 1924, it is announced that His Majesty the King has granted unrestricted permission for the wearing of the following decoration conferred by the

President of the French Republic in recognition of valuable services rendered during the War:—Croix de Guerre, Lt. (T./Maj.) (now Sqdn. Leader) W. S. Douglas, M.C., D.F.C.

THE ROYAL AIR FORCE

London Gazette, July 29, 1924

General Duties Branch.

The following are granted short service commissions as pilot officers on probation, with effect from, and with seniority of the dates indicated:—J. A. Ballantyne, L. S. Birt, P. S. Blockey, C. V. Brealey, W. T. Collins, F. E. J. C. Walsh, C. G. Crowden, F. H. Farrow, R. F. Francis, A. E. Haes, W. T. Holmes, K. W. James, L. A. G. D. Kelly, C. A. E. S. Kregor, G. D. Middleton, H. M. Bason, E. H. Newman, P. H. Nicholls, W. E. Nicholls, C. H. Noble, A. G. Pickering, A. O. Pollard, V.C., M.C., D.C.M. (Capt., Territorial Army Res.), E. G. Rosling, A. T. S. Studdert, D. M. Tyringham, G. A. Younger (July 15); A. C. H. Sharp (July 16). R. Beresford is granted a short service commission as a flying officer with effect from, and with seniority of, July 21.

The following pilot officers are promoted to rank of Flying Officer (June 20):—R. Lewes, F. G. Cator, W. A. Opie, G. E. Nicholls, T. D. Berridge.

Stores Branch

Flight Lieut. F. Binns, M.B.E., relinquishes acting rank of Sqdn. Leader (July 1).

Reserve of Air Force Officers

J. G. Hay is granted a commission in Class A, General Duties Branch, as a Flying Officer on prob. (July 29).

Memoranda

The following officers of the Electrical Services Works Co. are promoted to ranks indicated (June 16):—Flying Officer to be Flight Lieut.—G. E. Blake. Pilot Officers to be Flying Officers—R. S. Broderick, R. W. Strugnell, H. H. Fell, F. McK. Miller, J. N. Hewlett-Brooke.

London Gazette, August 1, 1924

General Duties Branch

Pilot Offr. on probation St. J. F. Wintour is confirmed in rank (May 10); Group Capt. the Hon. J. D. Boyle, C.B.E., D.S.O., is restored to full pay from half-pay (Aug. 1); Squadron Leader M. E. A. Wright, A.F.C., is transferred to Reserve, Class A (Aug. 1). The short-service commissions of the following Pilot Offrs. on probation are terminated on cessation of duty (Aug. 1):—L. M. Johnston; E. L. Shepherd. Flying Offr. W. D. Vernon-Knibbs is removed from R.A.F., His Majesty having no further use for his services (July 25).

Medical Branch

Flight Lt. J. G. F. Heal, M.D., D.O.M. and S., is transferred to the Reserve, Class D.2 (Aug. 1).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commander H. A. Williamson, C.M.G., A.F.C., to Air Ministry for Air Staff duties, 1.8.24.

Flight Lieutenants: J. M. McEntegart, to Air Ministry, 9.7.24. A. P. Ledger, M.B.E., to Boys' Wing, Cranwell, 11.8.24. J. L. M. de C. Hughes-Chamberlain, to No. 27 Squadron, India, 13.9.24.

Flying Officers: P. J. Bett, N. T. Goodwin, D. H. Macdonald-Lawson, P. J. Phelan, all posted to No. 4 Flying Training Sch., Egypt, 18.7.24. J. A. Elliott, to No. 13 Sqdn., Andover, 1.8.24.

Pilot Officers: H. B. Barrett, S. F. Bell, A. E. Carpenter, D. P. Clayton, W. A. Cooke, J. E. Davies, B. B. Dowling, L. A. Eggesfield, A. C. Evans-Evans, H. R. Gillespie, W. E. Gray, R. C. B. Hendy, J. H. Hunter, M. H. Jenks, N. S. Little, D. J. Lloyd, C. W. Martin, H. Miller, C. H. Morgan, R. W. Steele, W. E. Symonds, A. J. Thompson, C. W. L. Trusk, H. Walker, D. G. Wilson, all posted to No. 4 Flying Training School, Egypt, 18.7.24. G. L. Worthington, to No. 441 Flight, Leuchars, 4.8.24.

Stores Branch

■ Squadron Leaders.—H. E. J. Hewitt, to R.A.F. Depot (Non-effective Pool), on transfer to Home Estab., 27.6.24. A. G. N. Belfield (Accountant), to Aircraft Depot, Iraq, 18.7.24.

IN PARLIAMENT

Flying Practice

SIR F. SYKES, on July 28, asked whether the Air Council are considering the amount of daily flying which in peace conditions is being done by the Royal Air Force and the percentage of time spent by officers and men on the ground; whether the Council are satisfied that the amount of flying referred to in his statements on the Air Estimates on March 11 last is adequate both in regard to personnel of service squadrons and of personnel not included in such squadrons; and, if not, whether steps are being taken to ensure adequate and regular flying practice for both these classes of Royal Air Force personnel?

Mr. Leach: In answer to the first part of the question, the Air Council are watching carefully, as they always have done, the amount of daily flying carried out. As regards the second and third parts, the amount of flying carried out has not yet, for various reasons, reached the figure which the Air Council consider should be attained under normal conditions. The amount is, however, slowly increasing, and the Council are satisfied that the steps which they have taken are calculated to ensure adequate and regular flying practice for all officers on the general list of the Royal Air Force, however employed.

Royal Air Force.

LIEUT.-COMMANDER KENWORTHY on July 29 asked the Under-Secretary of State for Air how many officers of the general duties branch of the Air Service, liable to fly and ready for action, are stationed in the United Kingdom, without calling up reserves?

Mr. Leach: The number of qualified officer pilots in the general duties branch fit for full flying duties and stationed in the United Kingdom is 1,171. In addition, there are 38 qualified officer observers, 62 fully qualified non-commissioned officer pilots, and 220 officers and 15 non-commissioned officers under flying instruction.

Imperial Airways, Ltd.

MR. A. M. SAMUEL on July 30 asked the Under-Secretary of State for Air whether he is aware that Sir H. Hambling and Major Hills were nominated by His Majesty's Government as directors of Imperial Airways, Ltd.; whether the prospectus was sanctioned by the Government, and, if so, why Article 4 of the company's articles contradicted the terms of the prospectus, in that it stated that the purchase price payable was £148,750, based on the Report of Brigadier-General Bagnall-Wild and Lieut.-Col. Mervyn O'Gorman, nominated by the Air Ministry and Lloyds; whether he is aware that the prospectus

states that there were no promotion profits, while Article 4, though not referred to in the prospectus, binds subscribers not to object to the agreement mentioned in such article, and removes liability of a promoter or director to account for any benefit derived by him by reason of any promoter or director of the company being a vendor to it, or by reason of purchase consideration having been fixed by the vendors without any independent valuation, or of the board not being an independent board; and what is the reason for barring the rights of subscribers against a promoter or director without giving notice in a prospectus of the proposed waiver?

Mr. Leach: As regards the first part of the question, the answer is in the affirmative. As regards the remaining parts, the Government were not concerned with the terms of the prospectus, except to see that it did not misrepresent the arrangement between the Government and the company.

Mr. Samuel: Is the hon. gentleman aware that this prospectus breaks one of the prime commercial canons, and that it is very wrong that a Government Department should show so bad an example in being party to a practice in the issue of a prospectus which is regarded as undesirable?

Mr. Leach: The only business of the Government was to ascertain how far the prospectus met the arrangement which has been made between the company and the Government, and in no respect that we could discover did it transgress. So far as any other consideration is involved, I think that is a matter for the shareholders.

R.A.F. Chaplains

LIEUT.-COMMANDER KENWORTHY, on July 31, asked the Under-Secretary of State for Air how many chaplains there are in the Royal Air Force; how many chaplains are stationed in Iraq; how often divine service is held in Iraq in the camps with chaplains; and whether attendance is compulsory on all ranks and branches of the service who are noted as being members of the creed of the chaplains conducting divine service so far as the exigencies of the service will permit?

Mr. Leach: The answer to the first part of the question is 32; to the second, 5. As regards the third part, celebrations of Holy Communion and parade services are held regularly every Sunday at Bagdad and Hinaidi and at the Royal Air Force British Hospital, Hinaidi. Attendance at parade service is compulsory except for those on leave or prevented from attending by the exigencies of the service. I may add that divine services at which attendance is voluntary are held every Sunday evening at the stations mentioned.

reports on the work. So far Maj. Hemming has surveyed 250 miles up river, and states that he is thoroughly satisfied with the local conditions.

Mooring the "Shenandoah" at Sea

SOME interesting experiments are to be made at Narragansett Bay, U.S.A., the object of which will be to ascertain whether the U.S. rigid airship "Shenandoah" can be moored to a moving ship at sea. A large mooring-mast has been erected on the tank-steamer *Patoka* for this purpose. Experiments will also be made in refuelling and transferring passengers while the airship is so moored.

Japan's Air Force

THE Japanese Government has decided to reduce the number of divisions in the army from twenty to fourteen, which will result in a saving of about £3,000,000. This, it is reported, will be utilised in strengthening the Air Service.

Air Survey in British Guiana

MAJ. H. HEMMING, of the Aircraft Operating Co. (London), who—as reported in *FLIGHT* some little time back—is surveying the rivers of British Guiana on behalf of the West Indian Aerial Transport Co., has sent very encouraging

AIR POST STAMPS

By DOUGLAS B. ARMSTRONG.

Russian Aero Stamps

It appears that the mysterious new Russian air post stamps were in readiness for issue towards the end of last year, but were withheld owing to suspension of the air mail service during the winter months. Meanwhile a new gold standard currency had been introduced, necessitating alteration of the values originally indicated in paper roubles—hence the surcharges. The unsurcharged varieties are really therefore in the nature of essays, and as such are extremely scarce. The total printings of the surcharges are said to be 450,000 of the 10 kopeks on 5 roubles, 950,000 of the 15 kopeks on 1 rouble, and 1,450,000 of the 20 kopeks on 10 roubles. A fourth value has now made its appearance, viz. 5 kopeks on 3 roubles blue, of which there are a like number to the 10 kopeks.

Russian 45r. Air Stamp

In the course of some interesting notes upon the "Air Post of Soviet Russia," contributed to the *Postage Stamp* Mr. G. H. Bigsby comments upon the scarcity of the Russian provisional aero stamp of 1922. "Only very rarely," he writes, "does one come across a flown cover franked with the special 45r. aeroplane stamp (overprinted with the outline of an aeroplane in red). These stamps were issued on November 8, 1922, in honour of the fifth anniversary of the Soviet régime. The total issue did not number 100,000 copies. Only very limited supplies were distributed among the different post offices throughout the country. In order to prevent speculators from buying up the entire stock the Soviet authorities took stringent measures, and not more than two specimens were sold to each applicant. But notwithstanding these precautions the supplies of the 45r. air stamp were soon exhausted, and even in centres like Moscow and Petrograd none could be procured three or four days after they had been put on sale. This will not seem surprising when one realises the enormous dimensions of the country and the smallness of the issue."

"A very small number of these stamps were utilised for the actual prepayment of correspondence sent by air, in view of the fact that at that time it was obligatory in Russia for all senders of such letters to hand them for prepayment to the postal official, who affixed whatever stamps he fancied—ordinary or special air post ones. It is safe to assume that not more than 3,000 or 4,000 copies of the 45r. air stamp were used for this purpose. Hence flown Russian air covers bearing the stamp are considered rarities."

More Swiss Semi-officials

We are threatened with an avalanche of semi-official air post labels in connection with Flying Days held in different Swiss towns. It seems probable that the epidemic is not unconnected with the high prices that are being fetched by similar issues of the 1912-13 period.

The latest Swiss semi-official air post stamp hails from Romanshorn, where an international aviation meet apparently took place on June 9, 1924. Of the denomination 30 rappen, it depicts a lake scene with hydroplanes in the air and on the water; colours brown and yellow. Beneath the picture is the inscription "Internationales Schauliegen Romanshorn Pfingstmontag, 1924." The stamp seems to have had no franking power whatever, and was not even cancelled with the regulation postmark.

Letters conveyed by air from Basel to Bern on a special flight on May 27, 1924, were prepaid by current Swiss air post stamps of the government issue, which were cancelled however by a special violet postmark inscribed "Flugpost 27.V.1924 Basel-Bern." In addition flown covers were impressed with a cachet in blue lettered "Basel Muster-messe 27.V.1924 Flugpost Basel-Bern." Souvenir post-cards showing a view of the fair and overprinted with a like inscription were also employed on this occasion.

At Lausanne on May 29, 1924, a temporary post office was established on the flying ground at Blécherette for an international aviation meeting, and letters specially post-marked "Lausanne Blécherette 29.V.1924 Poste Aérienne" in black were forwarded on the following day to Geneva, Zurich and Munich per the air line "Ad Astra Aero."

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SIDE-WIND

THE head office of the British Petroleum Co., Ltd., distributors of "B.P." petrol, have been moved from 22, Fenchurch Street, London, to the new building of the Anglo-Persian Oil Co., Ltd., Britannic House, Moorgate, E.C.2.

PUBLICATIONS RECEIVED

Aeronautical Research Committee, Reports and Memoranda No. 891 (Ae. 121). Pressure Distribution over the Wings of, and Force Measurements on, a Model B.E. 2C Biplane with Raked Wing Tips. By A. S. Batson and H. L. Nixon. May, 1923. H.M. Stationery Office, Kingsway, W.C.2. Price 2s. net.

Aeronautical Research Committee Reports and Memoranda : No. 894 (Ae. 124).—Full Scale and Model Measurements of Pressure Distribution Round Two Ribs of a B.E.2E Aeroplane with R.A.F. 19 Section. By A. C. Kermode, B. D. Clark and R. G. Harris. December, 1923. Price 1s. net. No. 895 (Ae. 125).—Full Scale and Model Measurements of Pressure Distribution Round One Rib of a B.E. 2C Aeroplane with R.A.F. 15 Section. By A. C. Kermode and R. G. Harris. November, 1923. Price 1s. 6d. net. H.M. Stationery Office, Kingsway, London, W.C.2.

British Standard Dimensions for Narrow Type Concentric Piston Rings for Automobiles. No. 5023. May, 1924. Price 1s. net. *Interim British Standard Specification for Iron Castings for Air Cooled and Jacketed Cylinders*. No. 5024. May, 1924. Price 1s. net. *Interim British Standard Specification for Iron Castings for Sand Cast Pistons and Valve Guides*. No. 5025. May, 1924. Price 1s. net. *Interim British Standard Specification for Iron Castings for Flywheels for Automobiles*. No. 5026. May, 1924. Price 1s. net. *British Standard Specification for Steel Castings for Automobiles*. No. 5028. April, 1924. Price 1s. net. The British Engineering Standards Association, 28, Victoria Street, London, S.W.1.

The Business Features of Wembley. Compiled by "The Investors' Chronicle."—The Fleetway Press, Ltd., 3-9, Dane Street, High Holborn, London, W.C. Price 1s. post free.

Radio Instruments and Measurements. Bureau of Standards Circular, No. 74. March 10, 1924. U.S. Government Printing Office, Washington, D.C., U.S.A. Price 60 cents.

Aeronautical Prints and Drawings. With Text by Lieut.-Col. Lockwood Marsh and Foreword by Maj.-Gen. Sir F. H. Sykes. London: Halton and Truscott (Smith, Ltd., 57, Haymarket, S.W.1. Price £3 3s.

Revue Juridique Internationale de la Locomotion Aérienne. July, 1924. Edition Aérienne, 4, Rue Tronchet, Paris.

The Halton Magazine. Vol. 1, No. 2. Summer, 1924. Halton Magazine, Halton Camp, Bucks.

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AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1923

Published August 7, 1924.

- 3,889. J. DAVIDSON. I.c. engines of Diesel and semi-Diesel types. (218,700.)
14,604. L. GREGSON. Mounting of machine guns on aircraft. (218,806.)
18,678. SCHNEIDER ET CIE. Artillery apparatus on aeroplanes. (215,300.)
20,099. ARMSTRONG-SIDDELEY MOTORS, LTD., F. R. SMITH and B. W. SHILSON. Air-brake dynamometers. (218,859.)
21,247. ARMSTRONG-SIDDELEY MOTORS, LTD., and J. D. SIDDELEY. Ply-wood. (218,874.)
24,937. SOC. ANON. DES ATELIERS D'AVIATION L. BREGUET. Valves of i.c. engines. (209,035.)
32,048. J. PELLETIER. Lifting-door for hangars. (209,069.)

APPLIED FOR IN 1924.

Published August 7, 1924.

- 4,946. SPERRY GYROSCOPE CO. Gyroscopic indicators for use in aircraft. (218,953.)

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